KV-X2933E
RM-816

SONY
SERVICE MANUAL

Spanish Model
Serial NO.6,500,001 and later
Chassis No.SCC-E 22 N-A
MK 2

SUPPLEMENT-1

SUBJECT : AE-1C CHASSIS

File this supplement with the service manual.

TABLE OF CONTENTS

Section	Title	Page
1.	**GENERAL**	
	Switching On/Off	4
	Presetting	4
	Basic TV Operation	6
	Advanced TV Operation	7
	Teletext Operation	7
	Optional Connections/Operations	9
	How to select a NICAM broadcast	9
	Additional Information	10
2.	**DISASSEMBLY**	
2-1.	Rear Cover Removal	11
2-2.	Chassis Assembly Removal	11
2-3.	A, A1, and J1 Boards Removal	12
2-4.	B and V Boards Removal	12
2-5.	Service Position	12
2-6.	Picture Tube Removal	13
3.	**SET-UP ADJUSTMENTS**	
3-1.	Beam Landing	14
3-2.	Convergence	15
3-3.	Focus	17
3-4.	White Balance	17
4.	**CIRCUIT ADJUSTMENTS**	
4-1.	A Board Adjustments	18
4-2.	B Board Adjustment	18
4-3.	D Board Adjustments	19
4-4.	J1 Board Adjustments	20
4-5.	V Board Adjustment	20
4-6.	A1 Board Adjustment	20
4-7.	Secondary Adjustments	21
5.	**DIAGRAMS**	
5-1.	Block Diagram	23
5-2.	Circuit Boards Location	29
5-3.	Schematic Diagrams and Printed Wiring Boards	29
5-4.	Semiconductors	60
6.	**EXPLODED VIEWS**	
6-1.	Chassis	61
6-2.	Picture Tube	62
7.	**ELECTRICAL PARTS LIST**	63

OFILM

Television system	B/G/H
Color system	PAL, SECAM, NTSC3.58, NTSC4.43
Stereo system	GERMAN/NICAM stereo
Channel coverage	VHF : E2-E12 UHF : E21-E69 CABLE : S1-S20, S21-S41
Picture tube	Black Trinitron Approx. 72.4cm (29 inches) (Approx. 68cm picture measured diagonally 110° -degree deflection)
Inputs	1 21-pin connector : CENELEC standard including RGB input. 2 21-pin connector : including S video input 3 Video, Audio : phono jack.
Outputs	21-pin connector : CENELEC standard Headphones jack : stereo minijack External speaker terminals : 2-pin DIN Audio output jacks : phono jack (output dependent upon TV settings)
Sound output	15W+15W (music power)
Power consumption	113Wh
Dimensions	Approx. 656×554×512mm (w/h/d)
Weight	Approx. 60kg

【RM-816】

Remote control system	infrared control
Power requirements	3V dc 2 batteries IEC designation R6 (size AA)
Dimentions	Approx. 75×221×23mm(w/h/d)
Weight	Approx. 230g (including batters)
Accessories supplied	IEC designation R6 batteries (2)
Supplied accessories	RM-816 Remote Commander (1) IEC designation R6 batteries (2)

Design and specifications are subject to change without notice.

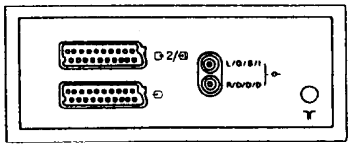
CAUTION

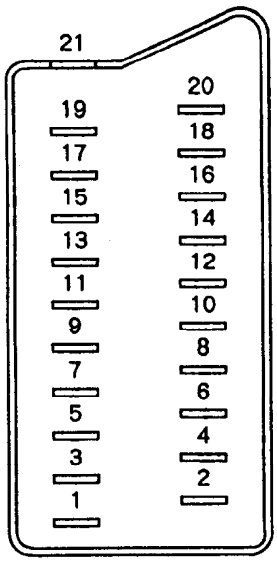
SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING !!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

21 pin connector (☎1, ☞2)





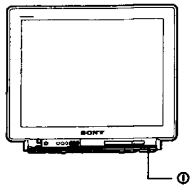
Pin No	1	2	Signal	Signal level
1	O	O	Audio output B (right)	Standard level : 0.5Vrms Output impedance : Less than 1kohm*
2	O	O	Audio input B (right)	Standard level : 0.5Vrms Input impedance : More than 10kohms*
3	O	O	Audio output A (left)	Standard level : 0.5Vrms Output impedance : Less than 1kohm*
4	O	O	Ground (audio)	
5	O	O	Ground (blue)	
6	O	O	Audio input A (left)	Standard level : 0.5Vrms Input impedance : More than 10kohms*
7	O	●	Blue input	0.7V±3dB, 75ohms, positive
8	O	O	Function select (AV control)	High state (9.5–12 V) : Part mode Low state (0–2 V) : TV mode Input impedance : More than 10kohms Input capacitance : Less than 2 nF
9	O	O	Ground (green)	
10	O	O	Open	
11	O	●	Green	Green signal : 0.7V±3dB, 75ohms, positive
12	O	O	Open	
13	O	O	Ground (red)	
14	O	O	Ground (blanking)	
15	O	–	Red input	0.7V±3dB, 75ohms, positive
	–	O	(S signal) croma input	0.3V±3dB, 75ohms, positive
16	O	●	Blanking input (Ys signal)	High state (1–3 V) Low state (0–0.4 V) Input impedance : 75ohmes
17	O	O	Ground (video output)	
18	O	O	Ground (video input)	
19	O	O	Video output	1V±3dB, 75ohms, positive Sync : 0.3V (–3, +10dB)
20	O	–	Video input	1 V±3dB, 75ohms, positive Sync : 0.3V (–3, +10dB)
	–	O	Video Input/Y (S signal)	1 V±3dB, 75ohms, positive Sync : 0.3V (–3, +10dB)
21	O	O	Common ground (plug, shield)	

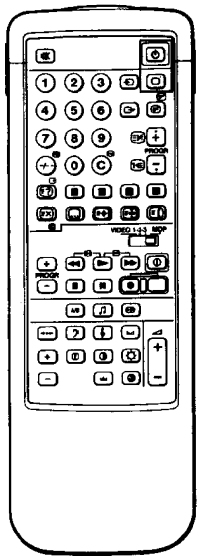
O connected ● unconnected (open) * at 20 Hz–20 kHz

SECTION 1
GENERAL

Switching on/off

After you have completed the basic preparation your TV is ready to be connected to the mains power supply (220/240V AC, 50Hz).





How to turn the TV on

Action	Result
Press ⏻ on the TV.	The TV will turn on. **Note:** If the screen remains blank, the TV may be in the standby mode. Press ▢ or any number button on the commander to switch it on.

How to turn the TV off

A Temporarily	
Press ⏻ to enter standby mode.	The TV will be in standby. To return to the TV mode press ▢
B Completely	
Press ⏻ on the TV.	The TV will turn off.

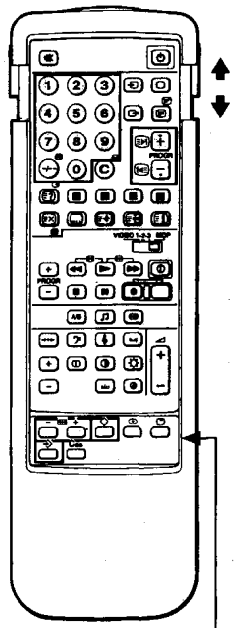
Presetting

After you have installed this TV you need to preset TV channels.

TV stations broadcast their channels at certain frequencies. You must preset these channels to programme numbers on this TV before you can watch the TV programmes.

There are 60 spaces for storing these channels.

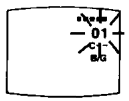
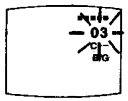
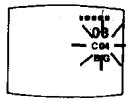
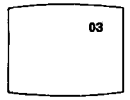
Slide open the full function side of the remote commander to reveal preset buttons.

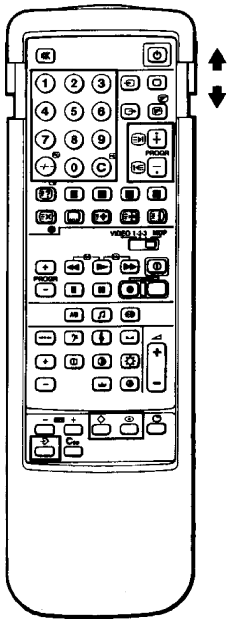


Note: These buttons should be used in preset mode only.

How to preset channels automatically

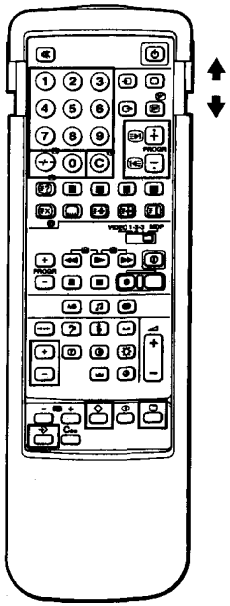
If you are unfamiliar with the channel numbers of the stations you wish to preset, use "How to preset channels automatically". If you are familiar with the channel numbers refer to "How to preset T.V. channels directly".

Action	Result
1 Press → to enter the preset mode.	 The programme number will start flashing.
2 Press PROGR + or - or the number buttons to select the programme number to which you want to preset channels. **Note** To select a double-digit number, use the -/-- button. For example, if you want to choose 23, press -/--, 2, and then 3.	 The programme number changes
3 Press ⏩ + or - once to search forward or backward for channels.	 When a channel is tuned in, the search will stop. **Note** If you want to skip a channel, press ⏩ + or ⏩ −.
4 Press ◇ if you want to store the channel which is tuned in. Press → to exit preset mode without storing.	 The channel is now stored and you have returned to TV mode.
5 Repeat steps 1 to 4 to store the other channels.	



How to preset channels directly

Action	Result
1 Press ⇨ to enter the preset mode.	The programme number will start flashing.
2 Press PROGR +/– or the number buttons to select the programme number on which you want to preset a channel. **Note** To select a double-digit number, use the -/-- button. For example, if you want to choose 23, press -/--, 2, and then 3.	The programme number changes.
3 Press C. If you want to select a cable channel, press C twice.	The indication "C--" ("S--" for a cable channel) starts flashing on the display.
4 Select the channel number with two digits (e.g. 04) by pressing the number buttons. **Note** Press the second number within 5 seconds after the first one, otherwise the operation will be cancelled.	The channel number changes. **Note** If you have made a mistake the letter "X" will appear. Repeat step 4 again.
5 Press ◇ to store the channel which is tuned in. Press ⇨ to exit the preset mode without storing.	The channel is now stored and you have returned to TV mode.
Repeat steps 1 to 5 to store the other channels.	



How to Name a Station

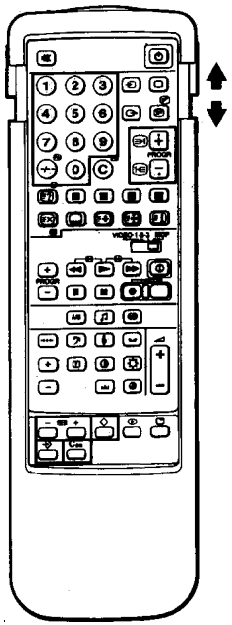
You can use up to five characters to "name" a channel or station (i.e. BBC1).

Action	Result
1 Select a programme number you want to name by pressing the PROGR +/– or the number buttons	The selected programme number will appear.
2 Press ⇨.	The programme number starts flashing.
3 Press C.	The first column of the station name indication will start flashing.
4 Press + or – to select a letter in the alphabet, a number, or a blank space.	The letters of the alphabet, numbers and the space ("–") will appear sequentially.
5 Press C.	The first character is now set and the second column will start flashing.
6 Repeat steps 4 and 5 to set each letter.	
7 Press ◇.	The channel name is now stored and you have returned to TV mode.

How to tune in a channel temporarily

You can tune a channel in temporarily, if it has not been preset.

Action	Result
1 Press C. For cable channels, press C twice.	The indication "C" ("S" for cable channels) appears on the screen.
2 Select the channel number with two digits by pressing the number buttons (e.g. for channel 4, first press 0, then 4.)	The channel is received, but it is not stored to any programme number.



How to Skip Programmes

Using the PROGR +/– buttons you can skip unused programme channel numbers. However, the skipped numbers may still be called up using the number buttons.

Action	Result
1 Press ⇥ to enter the preset mode.	The programme number will start flashing.
2 Select the programme number that you want to skip by pressing PROGR +/– or the number buttons.	The programme number changes.
3 Press C∞.	The lowest channel number appears under the programme number.
4 Press ◇.	03 The channel is now stored and you have returned to TV mode.
Repeat steps 1 to 4 to skip other programme numbers.	

How to Fine Tune Manually

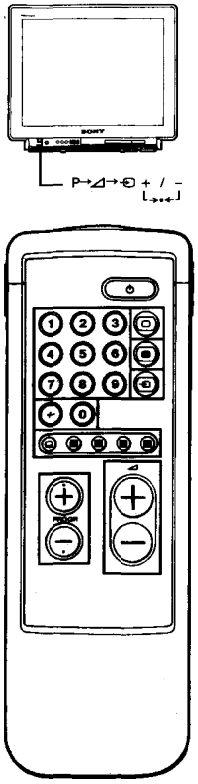
If the picture is distorted, you can fine tune the channel manually.

Action	Result
Press ⊞ + or – repeatedly until the picture looks normal.	The indication ← F → appears on the screen.
Press ⇥ to enter the preset mode.	The programme number starts flashing.
Press ◇.	The fine tuning is stored.

Note: The automatic fine tuning will function again when you preset the channel once more.

Basic TV Operation

Note: Press ⊥ on door to open.



This section introduces you to the basic control functions which are available on the simple side of the remote commander.

How to Select Programmes

Before you can select programmes make sure that you have preset channels, refer to page 29.

Action	Result
Press PROGR +/– or the number buttons. To select a double-digit number, use the -/-- button. For example, if you want to choose 23, press -/--, 2, and then 3.	04 The selected programme is displayed.

How to Adjust the Volume

Action	Result
Press ◿ + or –.	The volume markers will appear.

How to Use Additional Features

How to operate with the buttons on the TV

You can also select programmes and adjust the volume using the P→◿→⊙ and →•← +/– buttons on the front of the TV.
For operation, first press the P→◿→⊙ button repeatedly so that the P (for programme) or ◿ (for volume) indication appears on the screen, and then adjust with the →•← +/– buttons.

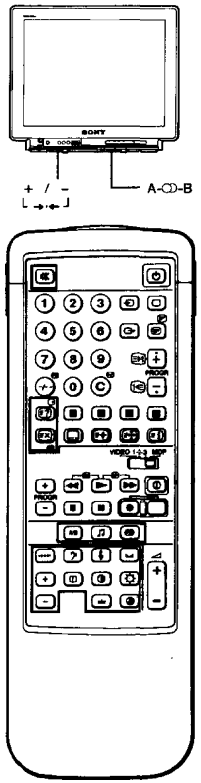
How to view the teletext

Press ▤. To return to the TV mode, press ▢.
For details about the teletext operation, refer to page 12.

How to view the video input picture

Press ⊙ To return to the TV mode, press ▢. For further details, refer to page 16.

Advanced TV Operation



This section shows you how to use convenient features and how to adjust the picture and sound to your taste.
Use the full-function side of the Remote Commander.

How to use on-screen display and special sound features

You can enjoy the following convenient features.

How to	Action	To resume normal picture/sound
Display on-screen indications	Press ⊕	Indications disappear after some seconds
Display programme numbers	Press ⊕ twice	Press ⊕ twice again.
Mute the sound	Press 🔇.	Press 🔇 again.
Select a language in bilingual programmes.	Press A/B. The selected mode of the A-○-B indicator on the TV lights up.	Press A/B.
Set the sound to music listening position	Press ♫.	Press ♫ again.
Use the space sound (special acoustic effect)	Press ⊛	Press ⊛ again.
Request the time	Press ⏲.	Press ⏲ again.

How to adjust the picture and sound

Although the picture and sound have been adjusted at the factory, you might want to adjust them to your own taste. To do this, please follow the steps.

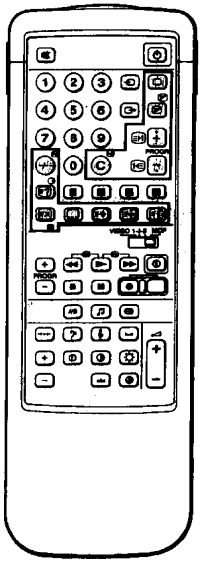
For picture adjustment

To Adjust:	Press:	Then:	Result: (+ ⟷ –)
Picture:			
Colour Intensity	◕	+ / –	More ⟷ Less
Picture Contrast	◑		More ⟷ Less
Brightness	☼		Bright ⟷ Dark
Hue (for NTSC only)			Reddish ⟷ Greenish
Picture Sharpness	◫		Sharp ⟷ Soft
Sound:			
Bass		+ / –	More ⟷ Less
Treble			More ⟷ Less
Balance			More Right/More Left

To reset the picture and sound to factory set levels press →·←.

On the set:
Press →·← +/– buttons simultaneously.

Teletext Operation



TV stations broadcast teletext programmes via the TV channels. To receive teletext programmes, use the buttons indicated in green on the full side of the Remote Commander.
With the simple side of the Remote Commander, only the basic operation is possible.

Action	Result
1 Select the channel which carries the teletext service you wish to see.	The channel changes on the screen.
2 Press ▤.	Teletext will appear. If the teletext signal is not broadcast, then p100 is displayed.
3 Input three digits for the page number using the number buttons. **Note** If you make a mistake, type in any three digits, then re-enter the correct page number.	The numbers are entered on the screen. The requested page will appear in a few seconds.
To return to the TV mode. Press ▢. **To change the teletext channels** First press ▢ to return to the TV mode, then repeat steps 1 to 3.	

Note
If the signal of the TV channel is weak, teletext errors may often occur.

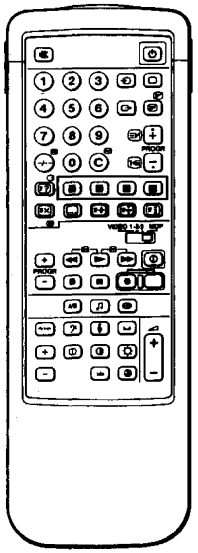
How to Use the Advanced Features of Teletext

How to	Action	Result (On-screen display)
Request the index page.	Press ⓘ (INDEX).	The index page appears.
Request the subtitle page (p888).	Press ▢.	The subtitle page is displayed (p888).
Access the next or preceding page.	Press ⊞ (PAGE +) or ⊟ (PAGE –).	The next or preceding page appears.

How to	Action	Result
Superimpose the teletext display on the TV programme.	Press ▤ once if you are in text mode, or press ▤ twice if in TV mode. To return to the normal teletext display press ▤ again.	The teletext displays are superimposed on the TV programmes.
Prevent a teletext page from being updated or changed.	Press ⏸ (HOLD). To resume normal teletext reception, press ▤ (TEXT/MIX).	The HOLD symbol (⏸) appears on the screen and the chosen sub-page is held until you cancel.
Enlarge the teletext display.	Press ⊡ once to enlarge the upper half. Press twice to enlarge the lower half. Press again to restore the normal display.	The upper half is enlarged.
Reveal concealed information (e.g. answers to a quiz).	Press ⊡ (REVEAL). Press again to conceal the information.	The information is revealed.
Watch the TV programme while waiting for a requested page to be displayed.	**1.** Request a new page.	The numbers are entered.
	2. Press ⊡ (TEXT CL).	The TV program is displayed, and the requested page number and other teletext data appear at the top of the screen.
	3. When the requested page has been captured, the page number remains and the other data disappears.	
	4. Press ▤ to view this page.	The requested page is displayed.
Have a requested page displayed at a pre-determined time.	**1.** Request a desired page.	The requested page is displayed.
	2. Press ⊡ (TP ON).	"T*****" appears at the bottom of the screen.
	3. Enter the time you want to have the page displayed with four digits using the number buttons. (For example, enter 0730 for 7:30 AM.)	The time is entered on the screen.
	4. Press ⊡ (TEXT CL) to watch the TV programme until the requested time. **To cancel the request** Display the teletext page, then press ⊡ (TP OFF).	At the requested time, the page number will be displayed at the top of the screen, to view this page, press ▤. The request is cancelled. To resume TV mode press ▢.

Some of the features may not be available depending on the Teletext service.

Teletext Operation



How to use the FASTEXT Feature

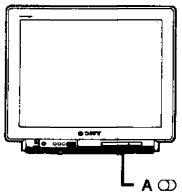
FASTEXT feature allows you to access pages quickly with one key operation. When a FASTEXT page is broadcast, a colour coded menu appears at the bottom of the screen. Each coloured prompt corresponds to the coloured buttons on either side of your Remote Commander.

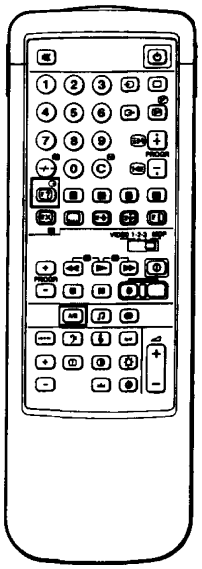
Operation

Action	Result
Press one of the coloured buttons which corresponds to the coloured prompt on the teletext.	The selected teletext page appears.

Note

Correct FASTEXT operation depends on the necessary signals sent from the TV station.





How to select a NICAM broadcast

This Sony TV has been designed to select Nicam broadcasts when available. Whenever a Nicam broadcast is received, the ⋈ symbol appears briefly on the screen. When the Nicam programme ends, or you switch channels to one without Nicam, the ⋈ symbol appears. To check if the channel you are watching is receiving Nicam, press the on screen display button, on the full function side of the remote commander.

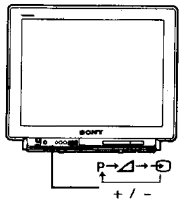
How to select the sound of your choice

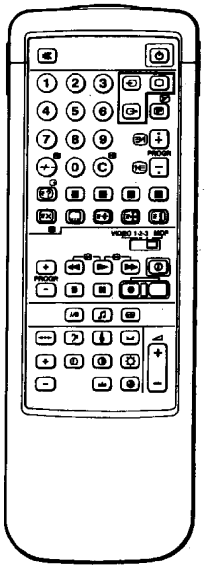
Nicam programmes can be broadcast in three ways. You may select the sound you want to hear in each of these, by pressing the button on the full function side of the remote commander.

Nicam service being broadcast	Action	The sound you hear	Indication on the TV A B
Stereo		Stereo	
	Press A/B	Normal	
	Press A/B again to return to stereo		
Mono		Mono	
	Press A/B	Normal	
	Press A/B again to return to Nicam mono.		

Bilingual		Language A	
	Press A/B	Language B	
	Press A/B	Normally broadcast language	
	Press A/B again to return to language A		

* Depending on availability of service.





How to view the video input picture

You can view the picture of video equipment connected to the input terminals by selecting the input mode.

Operation

Action	Result
Press repeatedly to select the desired input.	1 — Symbol for the selected input appears. (See the table below.)
To return to the TV mode, press the button.	

Input modes

Symbol	Result
1	Audio/video input through the connector.
	RGB input through the connector.
2	Audio/video input through the 2/ connector.
2	S video input (from a VTR equipped with an S video output) through the 2/ connector.
3	Audio/video input through and jacks on the front.
You can also select the input mode using the P button on the TV. In this case, first select and then press +/– buttons to select the input.	

How to select the Output

The 2/ connector outputs four kinds of audio/video signals. You have to select one of them as follows.

Operation

Action	Result
Press repeatedly to select the desired input.	1 — Symbol for the selected output appears. (See the table below.)

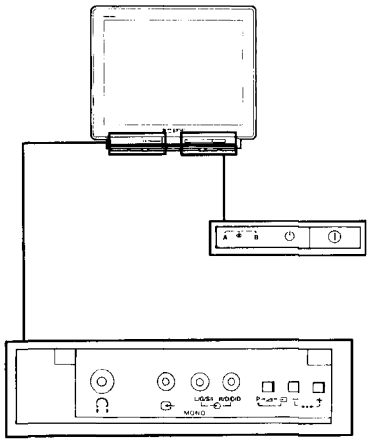
Output modes

Symbol	Output from
1	The audio/video signal from the 1 connector
2	The audio/video signal from the 2/ connector
3	The audio/video signal from the connectors.
TV	The audio/video signal from the aerial terminal.

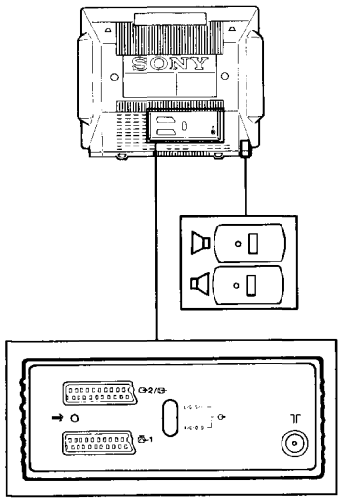
Additional Information

Parts Identification

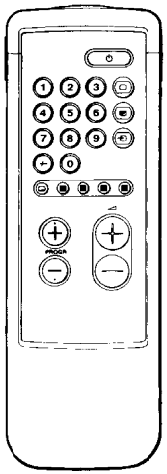
A



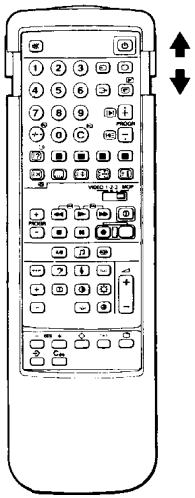
B



C



D



This section briefly describes the buttons and controls on the TV set and on the Remote Commander. For more information, refer to the pages given next to each description.

A TV set – Front

Sign	Name
⏻	Main power switch
⏻	Standby indicator
A-◯◯-B	NICAM indicators
∩	Headphones jack (stereo minijack)
⊖⊖	Input jacks (videc /audio)
P→◿→⊖	Function selector (Programme/ volume/input)
- +	Adjustment buttons for function selector

B TV set – Rear

Sign	Name
◁ ▷	Loudspeaker terminals (top: left, bottom: right)
⊖2/⊖S	21-pin Euro-AV connector (S-video/video input, TV/video output)
⊖	21-pin Euro-AV connector (RGB/ video input, TV output
⊖	Audio output jacks (phono jacks)
⊤	Aerial terminal (IEC type)

C Remote Commander – simple side

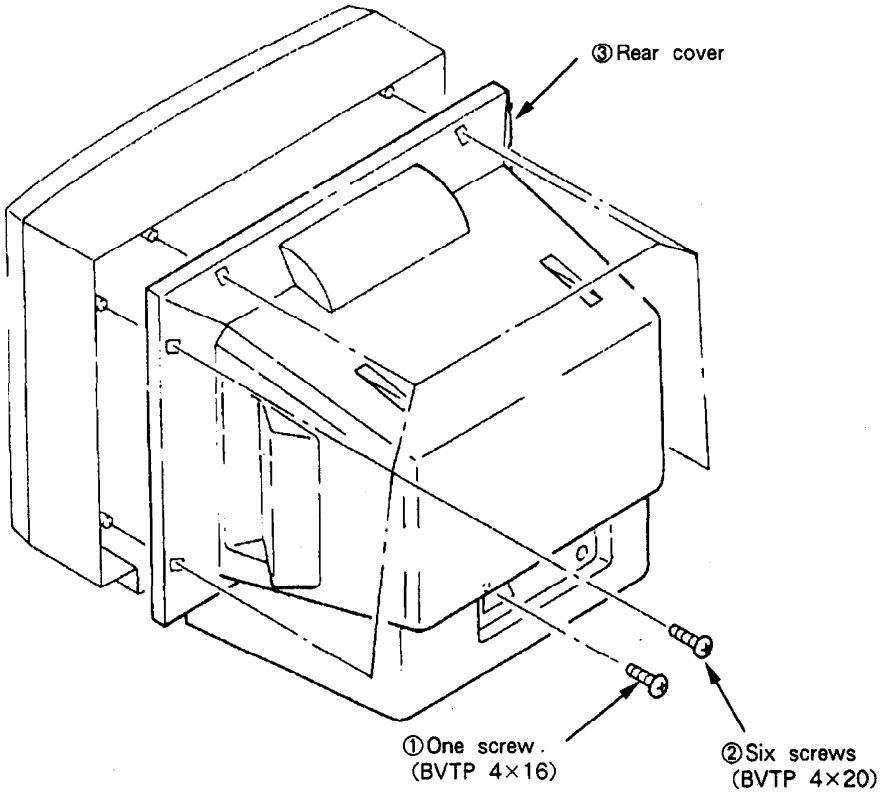
Sign	Name
⊖	Input mode selector
▤	Teletext button
■■■■	Fastext buttons
▢	TV mode selector
⏻	Standby button
1,2,3,4,5, 6,7,8,9, and 0	Number buttons
-/--	Double-digit entering button
◿ +/-	Volume control button
PROGR +/-	Programme selector

D Remote Commander – full function side

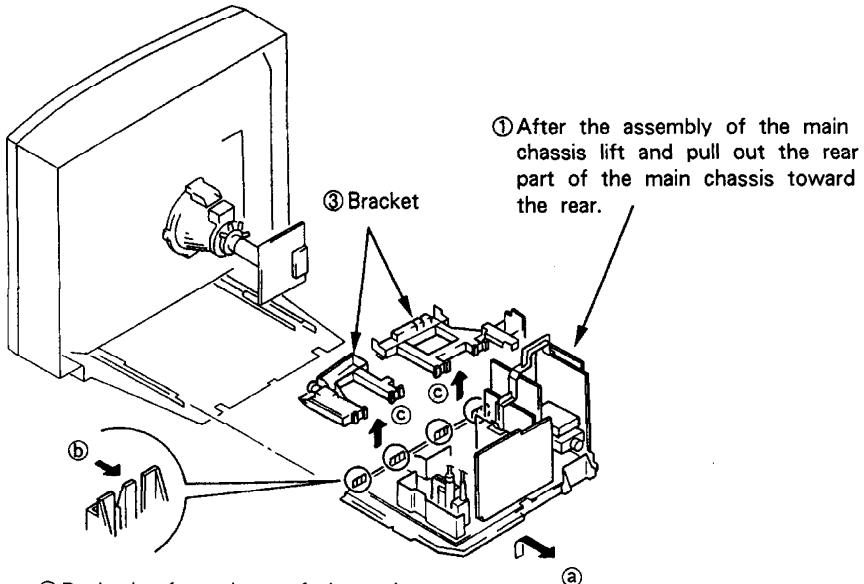
Sign	Name
🔇	Mute on/off button
⏻	Standby button
1,2,3,4,5, 6,7,8,9, and 0	Number buttons
⊖	Input mode selector
▢	TV power on/TV mode selector button
⊖	Output mode selector
▤	Teletext button
♫	Music button
A/B	Selector for NICAM
-/--	Double-digit entering button
C	Direct channel entering button
⊖	Space sound button
◷	Request time display
▤ ▤ ▤ ▤ ▤ ▤ ▤ ▤ ▤ ▤	Teletext operation buttons
■■■■	Fastext buttons
⊖	On-screen display button
→•←	Picture and sound adjustment reset button
◿ +/-	Volume control
PROGR +/-	Programme selector
◐ ◑ ☼ ◕ ◪ ◿ ♪ ♭ +/-	Picture and sound controls
VIDEO 1/2/3, MDP	Video equipment selector
◀◀ ▶▶ ■ ❚❚ ●	Video equipment operation buttons
Coo	Programme number clear button
⊖	Channel preset button
- ⊖ +	Tuning buttons
◇	Channel store button
▢	Station label button

SECTION 2
DISASSEMBLY

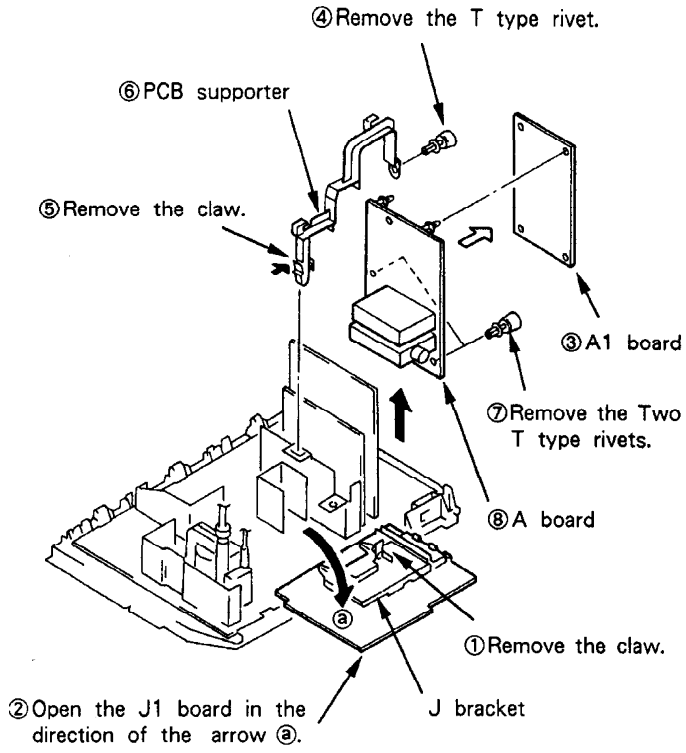
2-1. REAR COVER REMOVAL



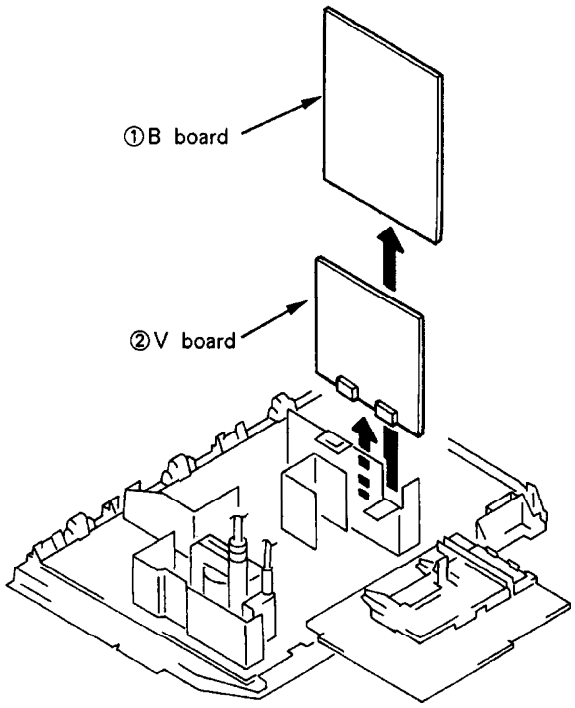
2-2. CHASSIS ASSEMBLY REMOVAL


①After the assembly of the main chassis lift and pull out the rear part of the main chassis toward the rear.
③Bracket
ⓒ
ⓒ
ⓑ
ⓐ
②Push the four claws of the main chassis in the direction of the arrow and remove the bracket upward.

2-3. A, A1 AND J1 BOARDS REMOVAL


④Remove the T type rivet.
⑥PCB supporter
⑤Remove the claw.
③A1 board
⑦Remove the Two T type rivets.
⑧A board
①Remove the claw.
②Open the J1 board in the direction of the arrow ⓐ.
J bracket

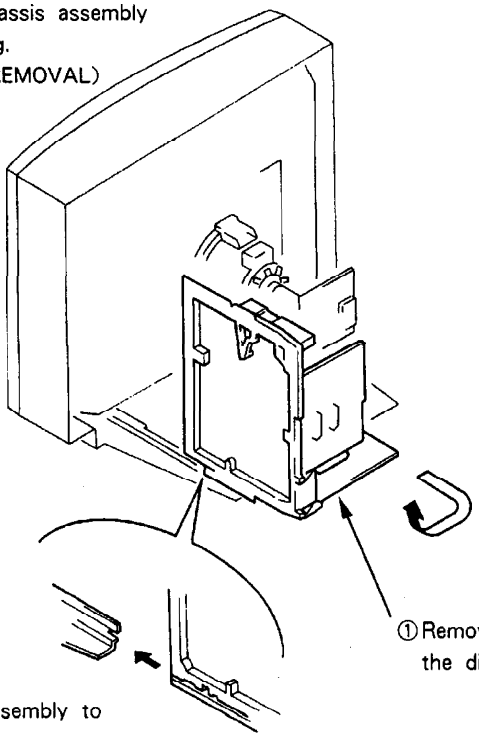
2-4. B AND V BOARDS REMOVAL



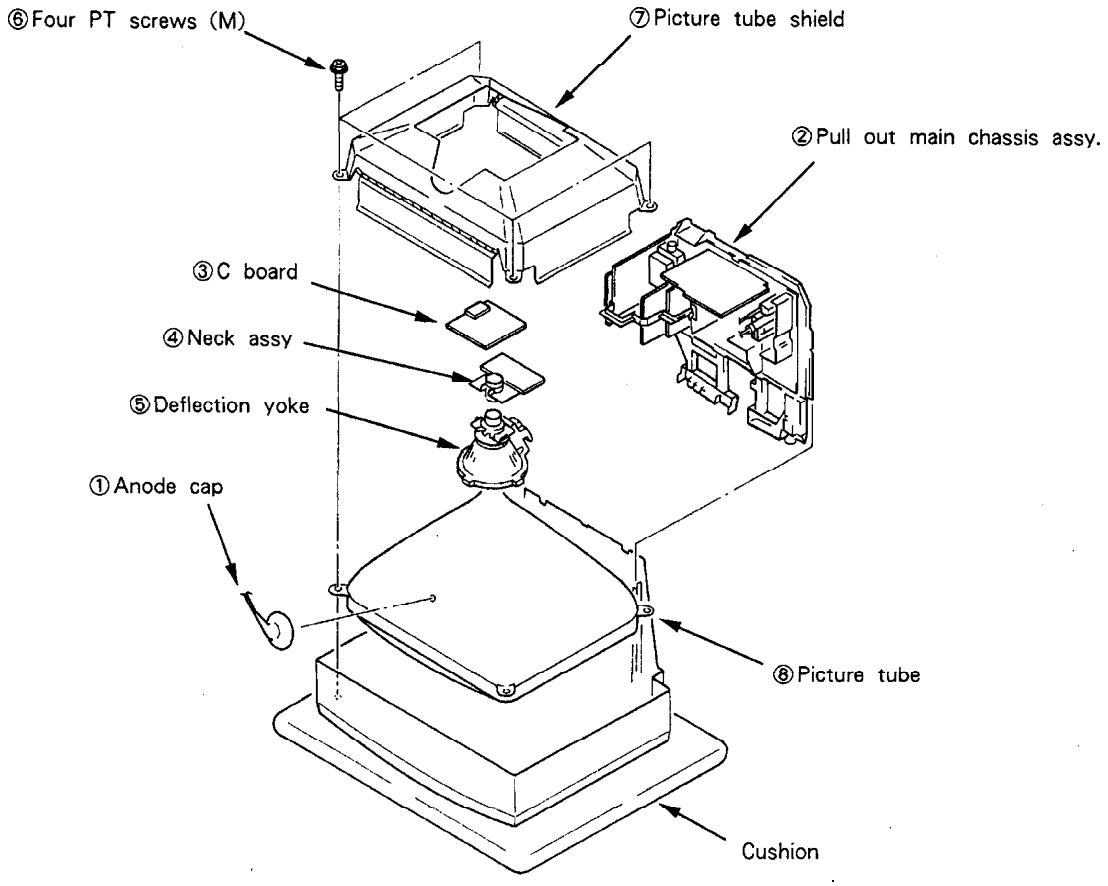
Note : 10pin extension cable (S-0945-001-0)

2-5. SERVICE POSITION

※Remove the bracket from the main chassis assembly and the perform the following servicing. (Refer to 2-2. CHASSIS ASSEMBLY REMOVAL)



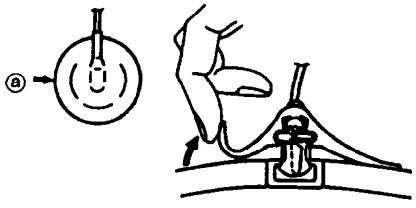
2-6. PICTURE TUBE REMOVAL



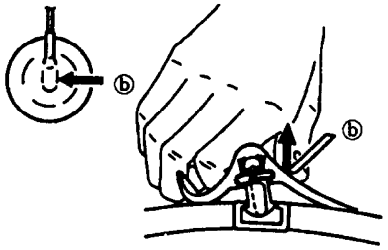
• REMOVAL OF ANODE-CAP

Note: Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield, or carbon painted on the CRT, after removing the anode.

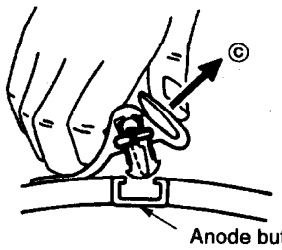
• REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



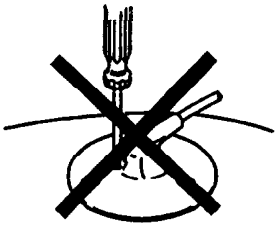
② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.

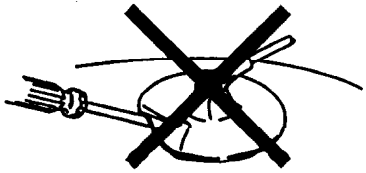


③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material !
② Don't press the rubber hardly not to hurt inside of anode-caps !
A metal fitting called as shatter-hook terminal is built in the rubber.
③ Don't turn the foot of rubber over hardly !
The shatter-hook terminal will stick out or hurt the rubber.





SECITON 3
SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there is specific instruction to the contrary, carry out these adjustments with the rated power supply.
- Unless there is specific instruction to the contrary, set the controls and switches this way :
  - ◑ Contrast ·····80%
    (or remote control normal)
  - ☼ Brightness ·····50%
- Carry out the following adjustments in this order:
  1. Beam landing
  2. Convergence
  3. Focus
  4. White balance

Note : Testing equipment required
1. Color bar/pattern generator
2. Degausser
3. DC power supply
4. Digital multimeter
5. Oscilloscope

Preparations :
- In order to reduce the influence of geomagnetism on the set's picture tube face it east or west.
- Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input the white signal with the pattern generator.
   Contrast
   Bightness } normal
2. Position neck ass'y as shown in Fig 3-2.
3. Set the pattern generator raster signal to red.
4. Move the deflection yoke to the rear and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side.
   (See Figures 3-1 through 3-3.)
5. Move the deflection yoke forward and adjust so that entire screen is red. (See Figure 3-1.)
6. Switch the raster signal to blue, then to green and verify the condition.
7. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
8. If the beam does not land correctly in all the corners, use a magnet to adjust it.
   (See Figure 3-4.)

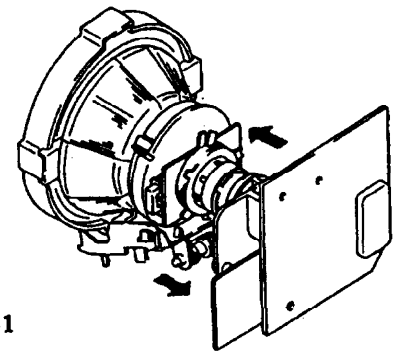
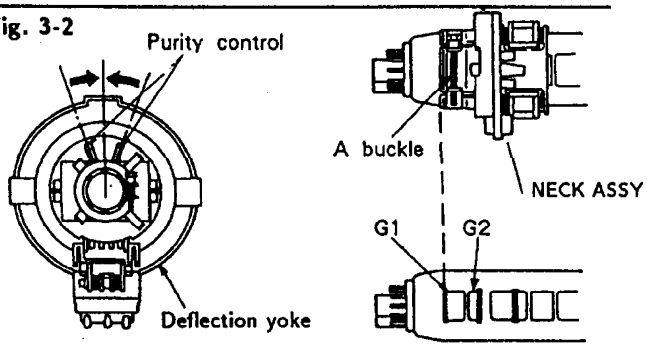


Fig. 3-1

Fig. 3-2



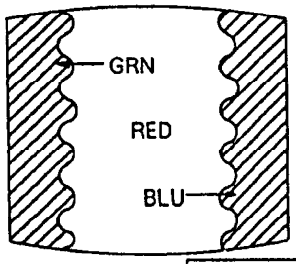


Fig. 3-3

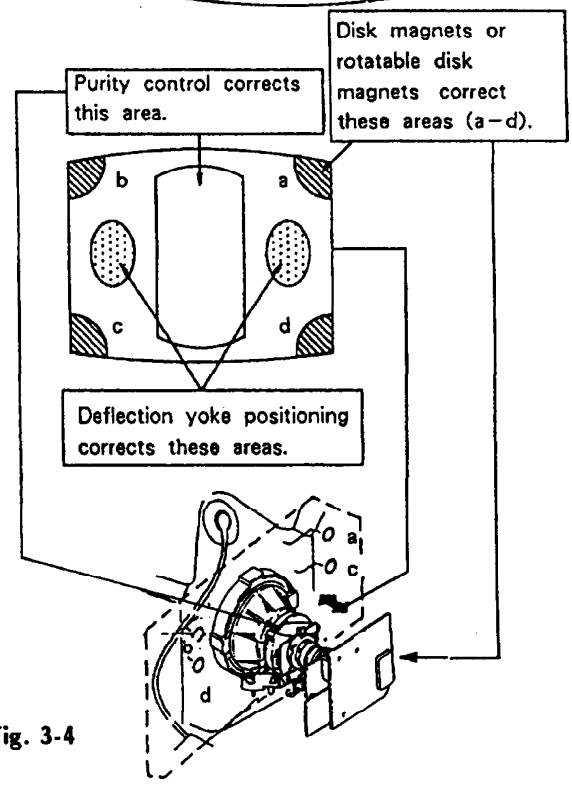


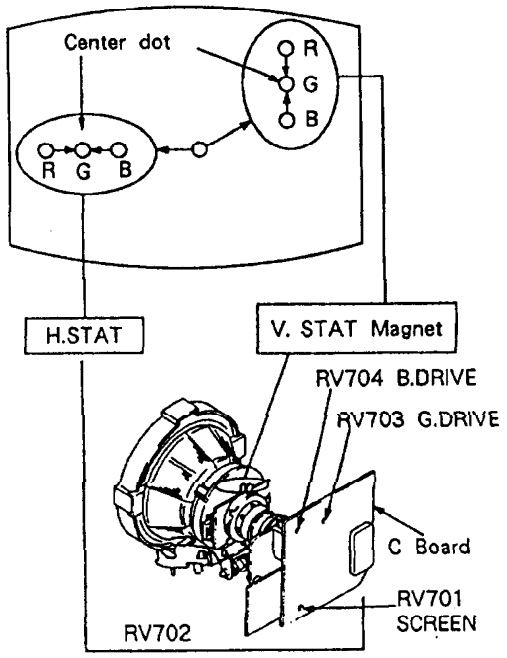
Fig. 3-4

3-2. CONVERGENCE

Preparations :

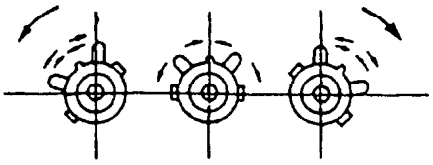
- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

(1) Horizontal and vertical static convergence

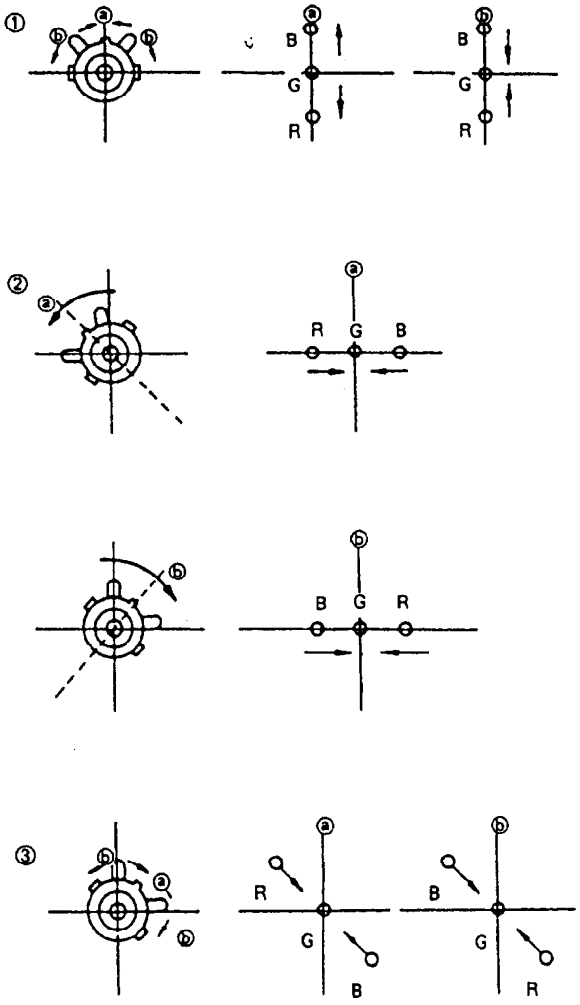


1. (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the center of the screen.
2. (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the center of the screen.
3. If the H.STAT variable resistor cannot bring the red, green, and blue points together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V. STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other)

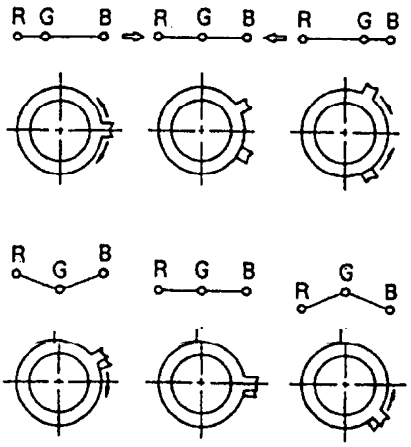
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.

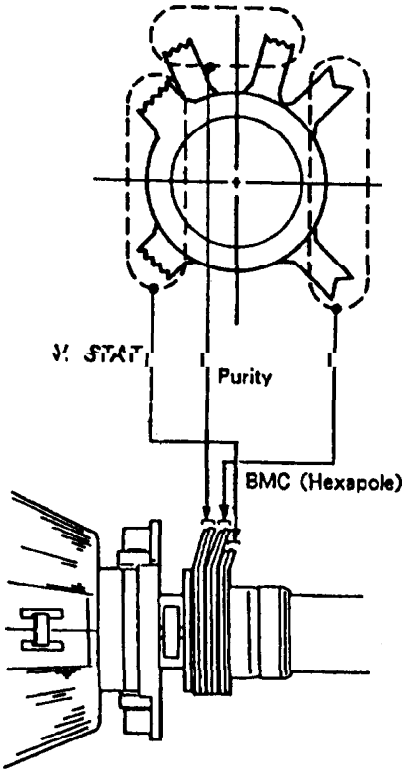


4. If the V.STAT magnet is moved in the direction of the ⓐ and ⓑ arrows, the red, green, and blue points move as shown below.



- Operation of BMC (Hexapole) Magnet



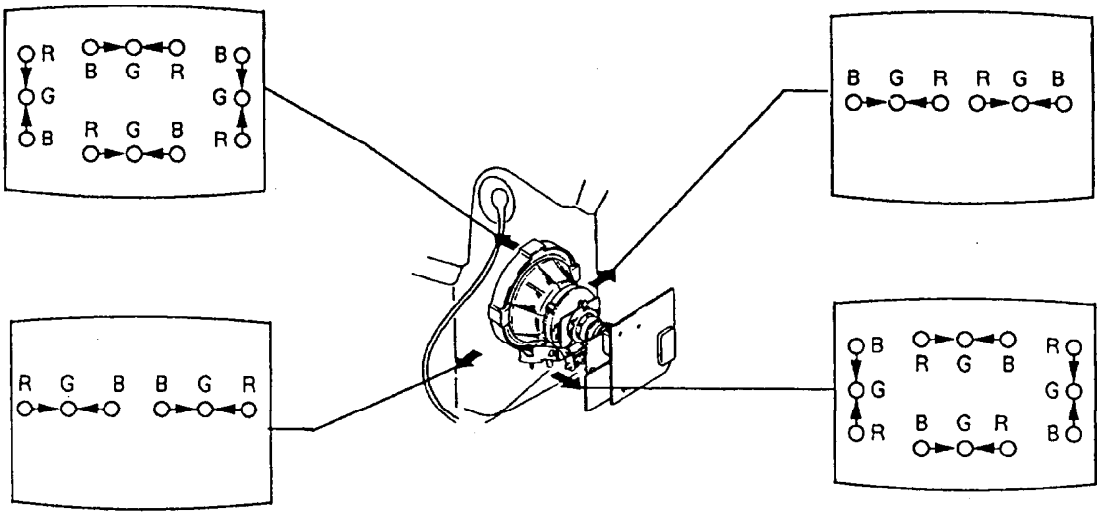


- The respective dot positions resulting from moving each magnet interact, so be sure to perform adjustment while tracking.
  Use the H.STAT VR to adjust the red, green, and blue dots so they coincide at the center of screen (by moving the dots in the horizontal direction).

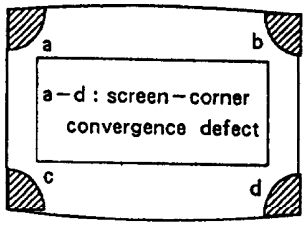
(2) Dynamic convergence adjustment
Preparations :

Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

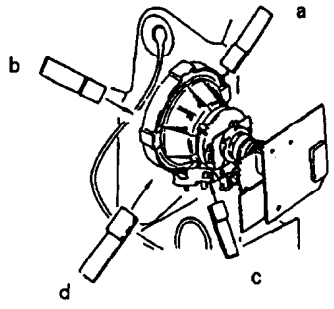
1. Slightly loosen the deflection yoke screws.
2. Remove the deflection yoke spacer.
3. Move the deflection yoke as shown in the figure below and optimize the convergence.
4. Tighten the deflection yoke screws.
5. Install the defelection yoke spacer.



(3) Screen corner convergence



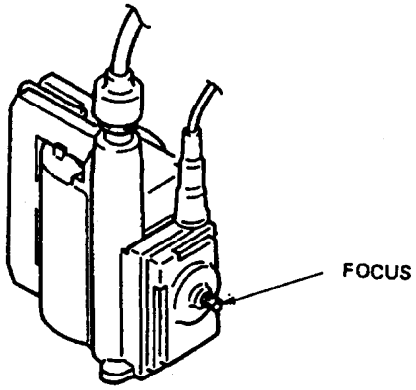
Install the permalloy assembly for the section with faulty.



Permalloy

3-3. FOCUS

Adjust the focus to optimize the screen.



3-4. WHITE BALANCE

[Screen G2 setting]

1. Input the dot signal from the pattern generator.
2. Set the picture brightness control to its lowest level.
3. Apply 170V DC to the R, G, and B cathodes with an external power supply.
4. While watching the picture, adjust G2 control RV701 (Screen) to the point just before the return lines disappear.

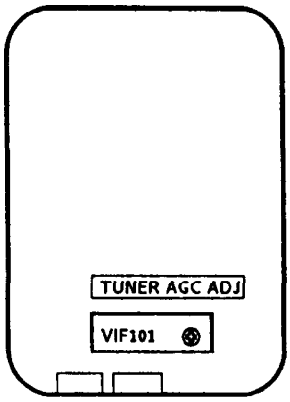
[White balance adjustment]

1. Input an all-white signal from the pattern generator.
2. Set the picture brightness and color controls to their normal levels.
3. Use the RV704 (B Drive) and RV703 (G Drive) to adjust white balance.

In the adjustments below, have the picture color and brightness settings at their normal levels unless there is a specific instruction to the contrary.

SECTION 4
CIRCUIT ADJUSTMENTS

4-1. A BOARD ADJUSTMENTS

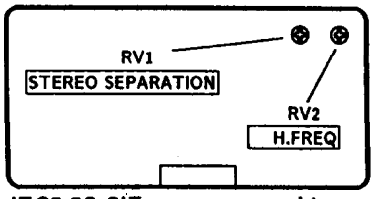


A BOARD (COMPONENT SIDE)

TUNER AGC ADJUSTMENT (VIF101, AGC VR)

1. Align with an appropriate signal between stations.
2. Adjust AGC VR so that snow noise and cross modulation just disappear from the picture.

IFG5.5S SIF



IFG5.5S SIF -component side-

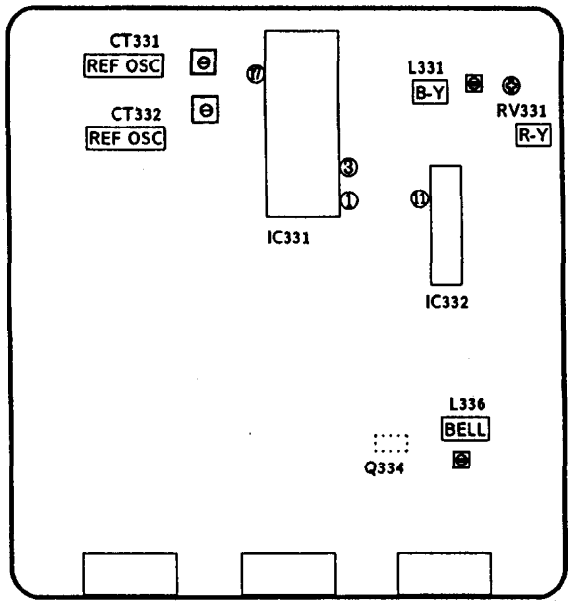
STEREO SEPALATION ADJUSTMENT (RV1)

1. Input stereo signals. (L-CH 400Hz, R-CH 1KHz)
2. Check the stereo indicator.
3. Connect on oscilloscope to pin⑧ (CH1) of CN1 through band pass filter of 1KHz
4. Adjust RV1 so that 1KHz voltage goes down to the minmum.

H FREQ (RV2)

1. Input a PAL COLOR BAR signal, then connect a jumper between pin⑫ IC4 and GND.
2. Connect a frequency counter to pin④ IFG5.5S (HP) of CN1 through a probe of 10 : 1.
3. Adjust RV2 (H.FREQ) 15.625±50Hz.
4. After adjustment, remove the jamper.

4-2. B BOARD ADJUSTMENT



B BOARD (COMPONENT SIDE)

REFERENCE OSCILLATOR ADJUSTMENT (CT332 8.8MHz)

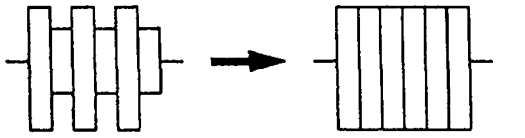
1. Input a PAL color bar signal.
2. Ground pin ⑰ of the IC331.
3. Adjust CT332 to obtain synchronization.

REFERENCE OSCILLATOR ADJUSTMENT (CT331 7.16MHz)

1. Input an NTSC color bar signal.
2. Ground pin ⑰ of IC331.
3. Adjust the CT331 to obtain synchronization.
4. Remove the jumper grounding pin ⑰ of IC331.

BELL FILTER ADJUSTMENT (L336)

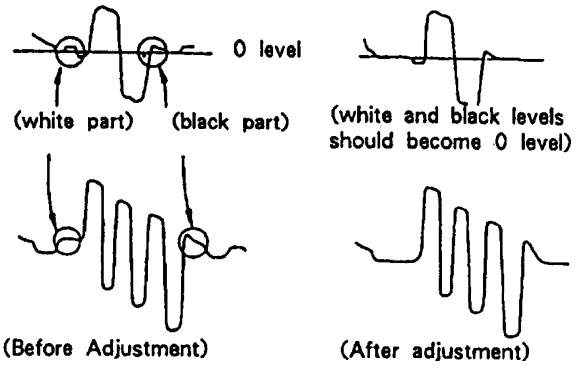
1. Input a SECAM color bar signal.
2. Connect the oscilloscope to the emitter of Q334.
3. Adjust L336 so that the waveform is flat.



<Before Adjustment> <After Adjustment>

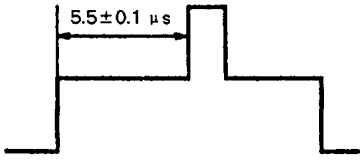
DISCRIMINATION ADJUSTMENTS (RV331 and L331)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to pin ① of IC331.
3. Adjust RV331 until the white and black sections of the waveform at pin ① are at the 0 level.
   Connect the oscilloscope to pin ③ of IC331.
4. Adjust L331 until the white and black sections of
5. the waveform at pin ③ are at the 0 level.

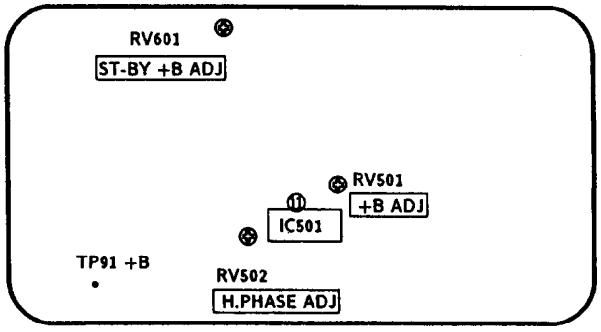


H.PHASE ADJUSTMENT (RV502)

1. Input a PAL color bar signal.
2. Set the picture and brightness controls to their normal levels.
3. Set RV1508 (H.CENT) to its mechanical center.
4. Connect the oscilloscope to pin ⑪ (SCP) of IC 501.
5. Rotatė RV502 to adjust to 5.5±0.1 μs.



4-3. D BOARD ADJUSTMENTS



D BOARD (COMPONENT SIDE)

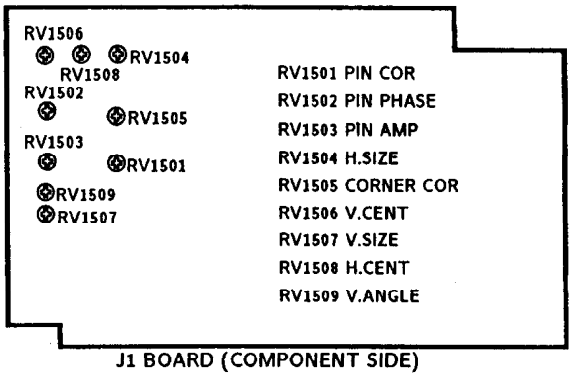
+B ADJUSTMENT (RV501)

1. Connect the digital multimeter to TP91.
2. Adjust RV501 to obtain 135±0.2V.

ST-BY +B ADJUSTMENT (RV601)

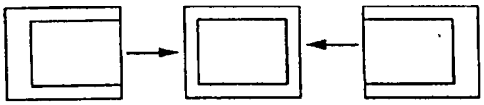
1. Put the system into ⏻ standby mode (remote commander).
2. Connect the digital multimeter to TP91.
3. Adjust RV601 to obtain 135±3V.
4. Take the system out of ⏻ standby mode (remote commander).

4-4. J1 BOARD ADJUSTMENTS

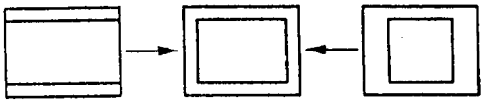


J1 BOARD (COMPONENT SIDE)

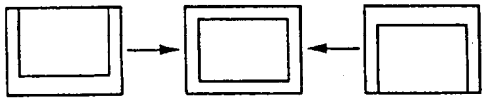
RV1508
H. CENT (HORIZONTAL CENTER)



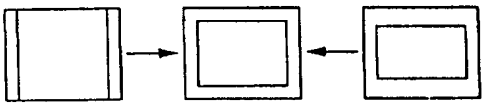
RV1504
H. SIZE (HORIZONTAL SIZE)



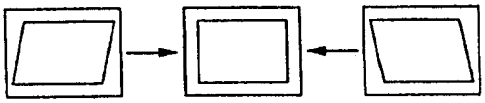
RV1506
V. CENT (VERTICAL CENTER)



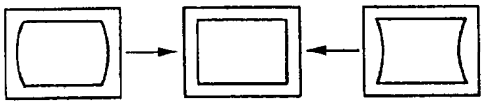
RV1507
V. SIZE (VERTICAL SIZE)



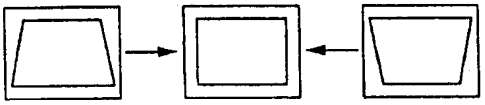
RV1509
V. ANGLE (VERTICAL ANGLE)



RV1503
PIN AMP (PINCUSHION AMPLIFIER)



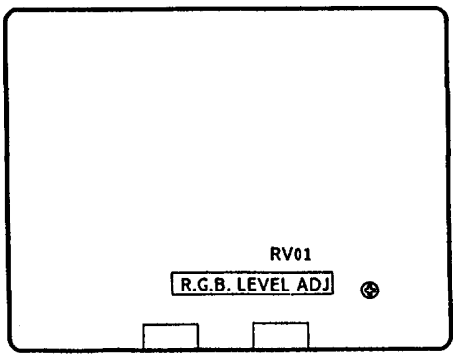
RV1502
PIN PHASE (PINCUSHION PHASE)



RV1501
PIN. COR (PINCUSHION CORRECT)

RV1505
CORNER COR (CORNER CORRECT)

4-5. V BOARD ADJUSTMENT

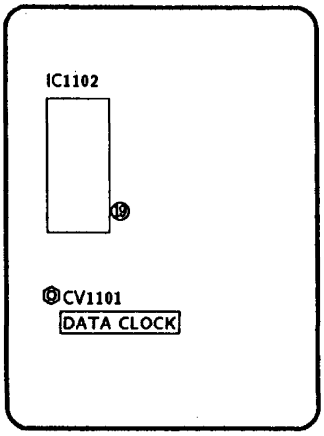


V BOARD (COMPONENT SIDE)

RGB LEVEL ADJUSTMENT (RV01)

1. Maximize the picture setting.
2. Adjust RV01 so that the RGB output is 0.75V.

4-6. A1 BOARD ADJUSTMENT



A1 BOARD (COMPONENT SIDE)

DATA CLOCK Adjustment (CV1101)

1. Tune in a no signal.
2. Connect a frequency counter to pin ⑲ of IC1102 (PCLK) through a probe of 10:1.
3. Adjust CV1101 (DATA CLOCK) so that frequency becomes 728.022KHz±1Hz.

4-7. SECONDARY ADJUSTMENTS

SUB BRIGHTNESS ADJUSTMENT

1. Set the system to receive a test pattern.
2. Press → • ← on the remote commander to put the system into normal mode.
3. Switch off the power.
4. While depressing the adjusting buttons + and − simultaneusly, turn on the power. (SUB mode is obtained)
5. Minimize the ◑ contrast setting.
6. Adjust the ☼ brightness control so that the gray scale 0 IRE section is cut off completely and the 20 IRE section is barely glowing.
7. Depress the ◇ (store) button of the remote commander.
   (SUB mode is released)

If there is no test color pattern

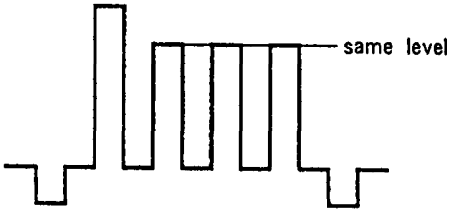
1. Set the system to receive a color pattern.
2. Press → • ← on the remote commander to put the system into normal mode.
   Set the ◒ color to its normal state.

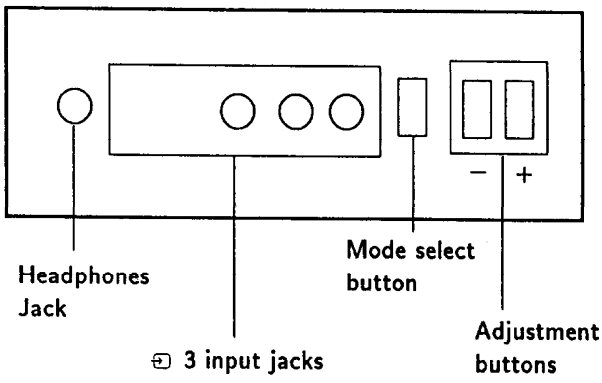
3-5. Steps are the same as above.

6. Since 20 IRE is nearly blue, adjust the ☼ brightness control so that the blue barely glows.
7. Same as step 7 above.
8. Press → • ← on the remote commander to put the system into normal mode.

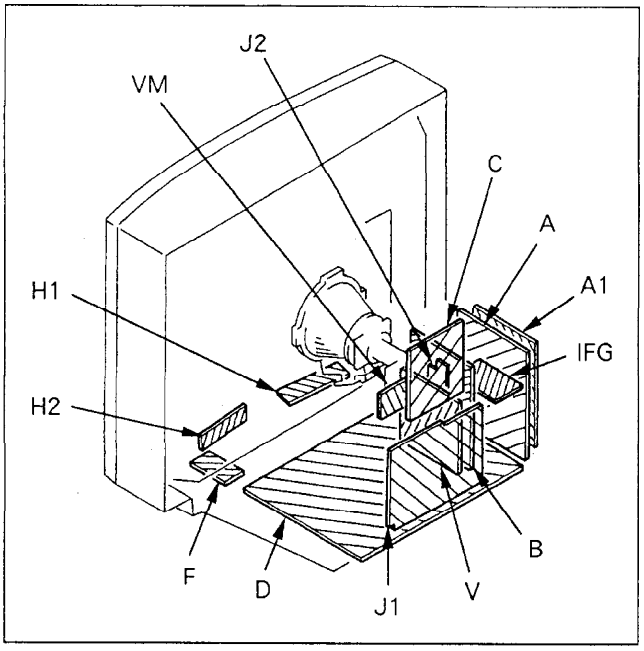
SUB COLOR ADJUSTMENT

1. Set the system to receive color bars.
2. Press → • ← on the remote commander to put the system into normal mode.
3. Cut off the power.
4. While depressing the adjustment buttons + and − simultaneusly, turn on the power. (SUB mode is obtained).
5. Adjust the color control so that the B out waveform (pin ⑤ of C board connector CNC72) is as shown in the figure below.
6. Depress the ◇ (store) button of the remote commander. (SUB mode is released)





5-2. CIRCUIT BOARDS LOCATION



Reference

RESISTOR

COIL
CAPACITOR

5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note :

- All capacitors are in μF unless otherwise noted.
  pF : μμF 50WV or less are not indicated except for electrolytics.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

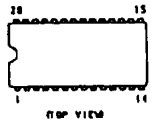
Pitch : 5mm Rating electrical power : 1/4W

- Chip resistor is in 1/10W.
- All resistors are in ohms. kΩ = 1000Ω, MΩ = 1000kΩ
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B.unless otherwise noted.
- All voltages are in V.
- Readings are taken with a 10MΩ digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- : B + line.
- : signal path. (RF)

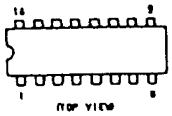
Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

5-4. SEMICONDUCTORS

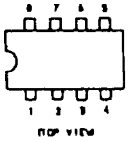
CXA1114P
TDA4580-V6
TDA4650-V3
TDA6200
TEA2028B
FCB61C65-70P
MAB8461P-W208
SAA7280



HD14053BFP
MC14052BCP
MC14053BCP
PCF8574
TC4051BPHB
TC4052BPHB
TDA8442-N3
TEA2260

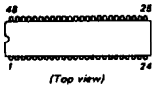


RC4558P
SDA2546
TBA129
TEA2014A
TEA2031A
μPC4558C
NE5532P
TDA1543

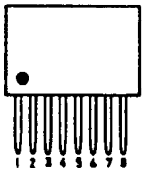


SDA20560-A008

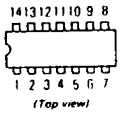
SAA5246P/E



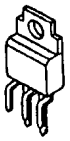
HIC2110



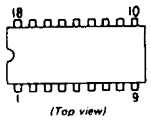
SN74LS02



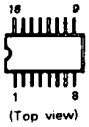
TDA2050



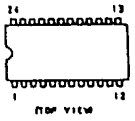
TDA2595/V9



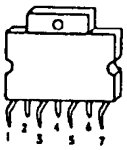
TDA4660V2



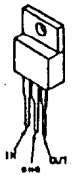
TDA6600-2



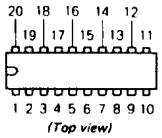
TDA8170



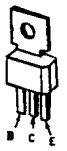
TEA7605
TYA7812CT



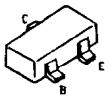
TDA8732



BF871



DTA114EK
DTA144EK
DTC124EK
DTC144EK
2SA1162G
2SC1623-L5L6
2SC2712-YG
DTC114EK
2SB1295-UL6
DTC115EK
2SC2412K



DTA144ES
DTC144ES

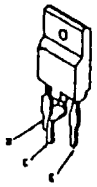
2SA1091-O

2SA1220A-P
2SC2688-LK

2SB734-34
2SD774-34

2SC2785-HFE

2SD1584-LB
2SD1941-06

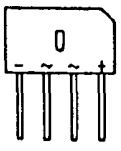


2SD2096-EF

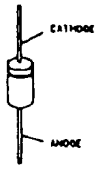
2SD789-34

CTU-12S

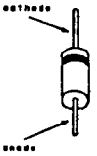
D4SB60L-F



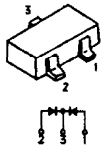
EGP20G
ERC06-15S
RGP02-17
RU-3AM
WG713A



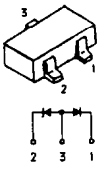
ERD29-08J



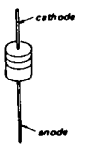
MA152WK
DAN202K



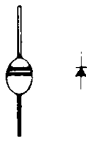
DAP202K



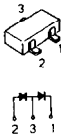
HZS11NB3
HZS5.6NB3
MTZJ-13B
MTZJ-15A
MTZJ-3.9B
MTZJ-33A
MTZJ-36D
MTZJ-10C
RD11ESB3
RD5.6ESB2
RD6.2ESB2
RD6.8ESB2
RD7.5ESB2
RD9.1ESB3
UZ-4.7BSC
1SS119



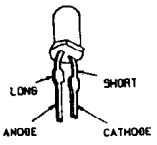
U05G



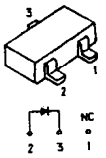
1SS226



LD-201VR



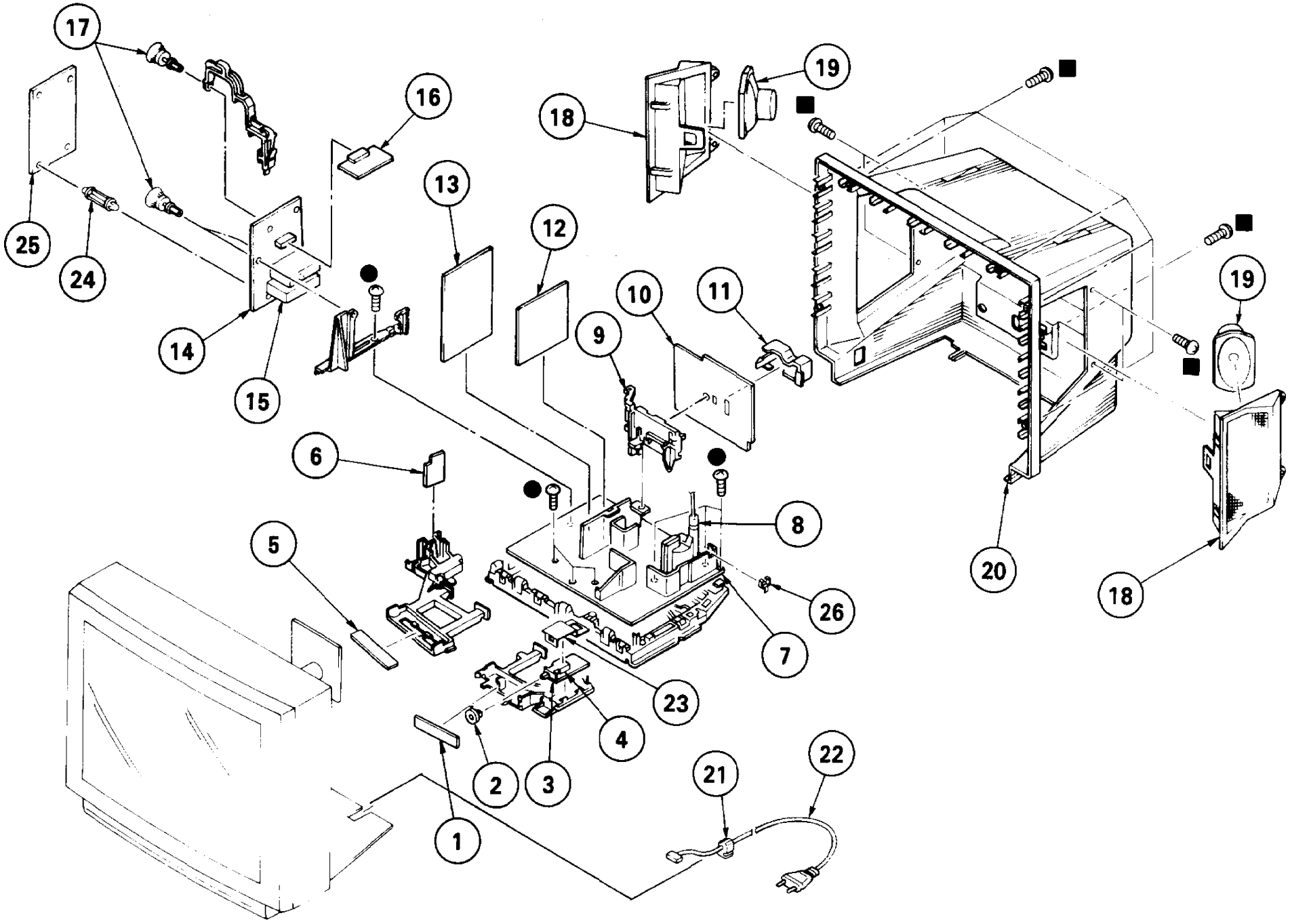
RD3.6M-B2
RD5.6M-B2
RD6.8M-B2
MA3056M-TX



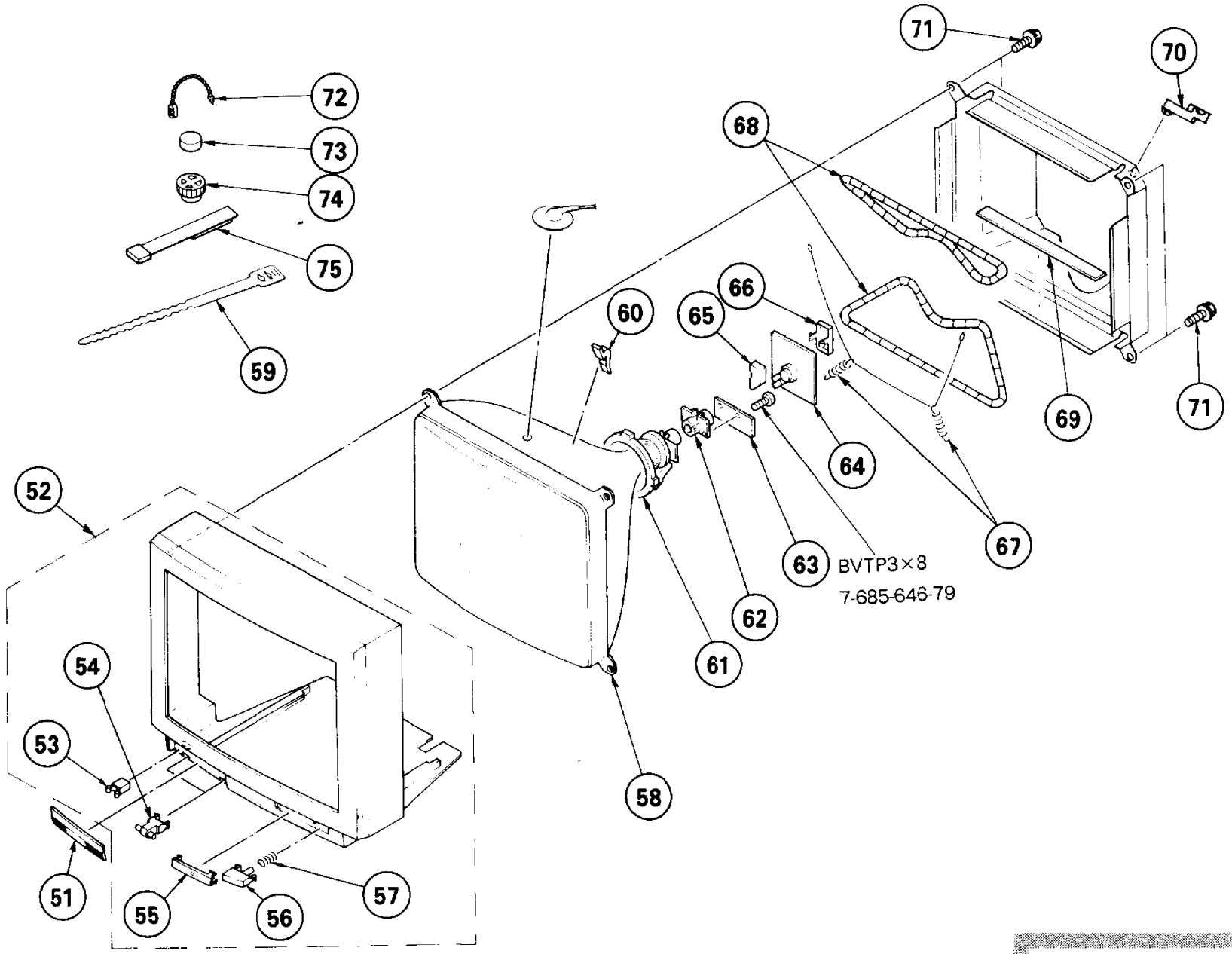
6-1. CHASSIS

● : BVTP3×12 7-685-648-79

■ : BVTP4×16 7-685-663-79



6-2. PICTURE TUBE



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

KV-X2931D
RM-689

SERVICE MANUAL

AEP Model
Chassis No. SCC-D51L-A

AE-1B CHASSIS

Note: The service manual for RM-689 has been issued separately.

MODELS OF THE SAME SERIES	
KV-X2931D	
KV-X2531D	
KV-X2131D	

SPECIFICATIONS

Television system	B/G/H
Color system	PAL, SECAM, NTSC3.58, NTSC4.43
Channel coverage	VHF : E2-E12 UHF : E21-E69 CABLE : S1-S20, S21-S41
Picture tube	Trinitron tube Approx. 72.4 cm (29 inches) (Approx. 68 cm picture measured diagonally 110°-degree deflection)
Inputs	1 21-pin connector : CENELEC standard including RGB input. 2 21-pin connector : including S video input 3 Video, Audio : phno jack.
Outputs	21-pin connector : CENELEC standard Headphones jack : stereo minijack External speaker terminals : 2-pin DIN Audio output jacks : phono jack (output dependent upon TV settings)
Sound output	15 W +15 W (music power)
Power consumption	109 Wh
Dimensions	Approx. 656x554x512 mm (w/h/d)
Weight	Approx. 60kg
Supplied accessories	RM-689 Remote Commander (1) IEC designation R6 batteries (2)

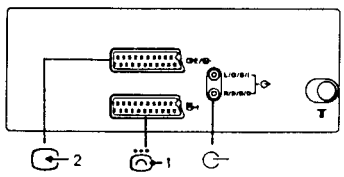
Design and specifications are subject to change without notice.

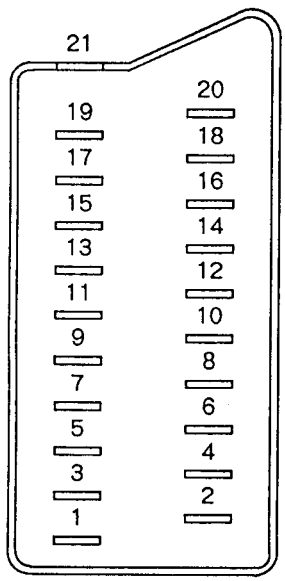
MICROFILM

TRINITRON® COLOR TV

SONY®

21 pin connector (1, 2)





Pin No	1	2	Signal	Signal level
1	○	○	Audio output B (right)	Standard level : 0.5Vrms Output impedance : Less than 1kohm *
2	○	○	Audio input B (right)	Standard level : 0.5Vrms Input impedance : More than 10kohms *
3	○	○	Audio output A (left)	Standard level : 0.5Vrms Output impedance : Less than 1kohm *
4	○	○	Ground (audio)	
5	○	○	Ground (blue)	
6	○	○	Audio input A (left)	Standard level : 0.5Vrms Input impedance : More than 10kohms *
7	○	●	Blue input	0.7V±3dB, 75ohms, positive
8	○	○	Function select (AV control)	High state (9.5–12 V) : Part mode Low state (0–2 V) : TV mode Input impedance : More than 10kohms Input capacitance : Less than 2 nF
9	○	○	Ground (green)	
10	○	○	Open	
11	○	●	Green	Green signal : 0.7V±3dB, 75ohms, positve
12	○	○	Open	
13	○	○	Ground (red)	
14	○	○	Ground (blanking)	
15	○	–	Red input	0.7V±3dB, 75ohms, positive
	–	○	(S signal) croma input	0.3V±3dB, 75ohms, positive
16	○	●	Blanking input (Ys signal)	High state (1–3 V) Low state (0–0.4 V) Input impedance : 75ohmes
17	○	○	Ground (video output)	
18	○	○	Ground (video input)	
19	○	○	Video output	1V±3dB, 75ohms, positive Sync : 0.3V (–3, +10dB)
20	○	–	Video input	1 V±3dB, 75ohms, positive Sync : 0.3V (–3, +10dB)
	–	○	Video input/Y (S signal)	1 V±3dB, 75ohms, positive Sync : 0.3V (–3, +10dB)
21	○	○	Common ground (plug, shield)	

○ connected ● unconnected (open) * at 20 Hz–20 kHz

WARNING !!

AN ISOLATION TRANSFORMER SHOULD BE USED DURING ANY SERVICE TO AVOID POSSIBLE SHOCK HAZARD, BECAUSE OF LIVE CHASSIS.
THE CHASSIS OF THIS RECEIVER IS DIRECTLY CONNECTED TO THE AC POWER LINE.

SAFETY-RELATED COMPONENT WARNING !!

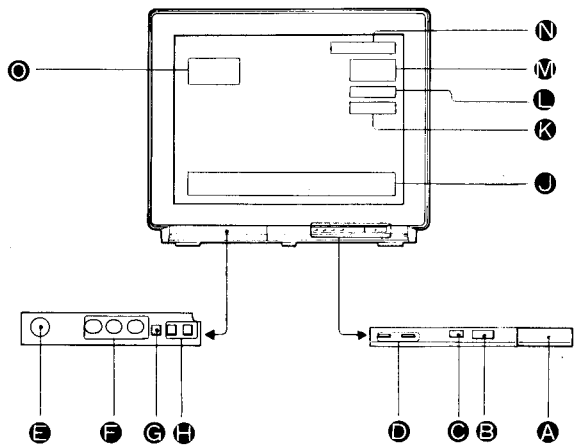
COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

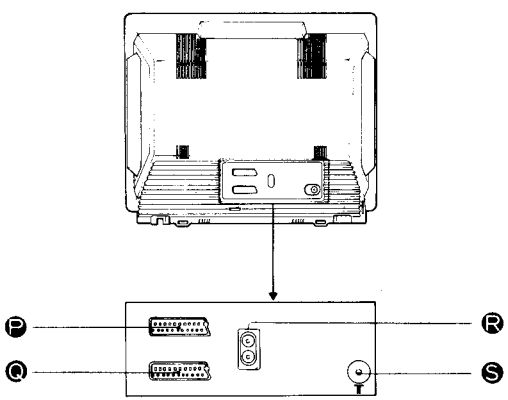
TABLE OF CONTENTS

Section	Title	Page
1.	**GENERAL**	
1-1.	Function of Controls	4
1-2.	To Preset Channels	6
1-3.	Viewing Teletext	7
1-4.	Operating Other Equipment	8
1-5.	Connecting Other Equipment	8
2.	**DISASSEMBLY**	
2-1.	Rear Cover Removal	9
2-2.	Chassis Assembly Removal	9
2-3.	A and J1 Boards Removal	9
2-4.	B and V Boards Removal	10
2-5.	Service Position	10
2-6.	Picture Tube Removal	11
3.	**SET-UP ADJUSTMENTS**	
3-1.	Beam Landing	12
3-2.	Convergence	13
3-3.	Focus	15
3-4.	White Balance	15
4.	**CIRCUIT ADJUSTMENTS**	
4-1.	A Board Adjustment	16
4-2.	B Board Adjustments	16
4-3.	D Board Adjustments	17
4-4.	J1 Board Adjustments	17
4-5.	V Board Adjustments	18
4-6.	Secondary Adjustment	18
5.	**DIAGRAMS**	
5-1.	Block Diagram	21
5-2.	Circuit Boards Location	25
5-3.	Schematic Diagrams and Printed Wiring Boards	26
5-4.	Semiconductors	52
6.	**EXPLODED VIEWS**	
6-1.	Chassis	53
6-2.	Picture Tube	54
7.	**ELECTRICAL PARTS LIST**	55

SECTION 1
GENERAL

1-1. FUNCTION OF CONTROLS





ON THE SET

A Power Switch ⏻
Use it to switch the set on and off. When you switch the set on, the programme number of the station tuned in will be indicated in the on-screen display (M) for some seconds. In case of short breaks of operation, you can switch the set on and off using the Remote Commander (See »CONTROLS ON THE REMOTE COMMANDER«).

B Remote control detector
(See »CONTROLS ON THE REMOTE COMMANDER«).

C ⏻ Standby/Reponse indicator
This indicator lights up when the TV set is in standby mode and it flashes each time the set receives signals from the Remote Commander.

D Stereo A/B indicators
During bilingual programmes one of the two indicators lights up, depending upon the selected channel **A** or **B**. When stereo programmes are broadcast both indicators light up. (See »CONTROLS ON THE REMOTE COMMANDER«).

Jacks and control panel (front of set)
The jacks and the control panel are situated behind a cover. Please press the arrow marking on the cover to open it.

E Headphones jack (stereo minijack)
Connect only stereo headphones.

F Input jacks
Video input jack (phono jack) **3** (yellow)
Audio input jacks (phono jacks) (red and white).

G Mode select button
Use this button to select either the channel select mode, volume adjustment or the input mode.

H Adjustment buttons +/–
Select at first the item to be adjusted using the Mode select button G (**P**: channel select mode), (volume) or (input mode), then adjust the item by pressing the + or – button.
You can also use these buttons to reset the picture and sound adjustments to the factory-set levels. For this purpose press both buttons simultaneously.

On-screen display
When you repeatedly press button 12 on the Remote Commander, the following information will be indicated on the screen in turn:

J Picture and sound adjustment items:
contrast, colour, brightness, bass, treble or balance and their respective levels; as well as mute, reset, space sound, loudness and NICAM indications, when the respective buttons are pressed.

When you press button 10 on the Remote Commander, the following information will be indicated on the screen:

K TV-System: I (normal UK broadcast system)

L Channel number

M Programme number or input mode;
1, , 2, 2, 3;

N Indication of the station name

O AV output indication; 1, 2, 3 or TV (see »CONTROLS ON THE REMOTE COMMANDER«).

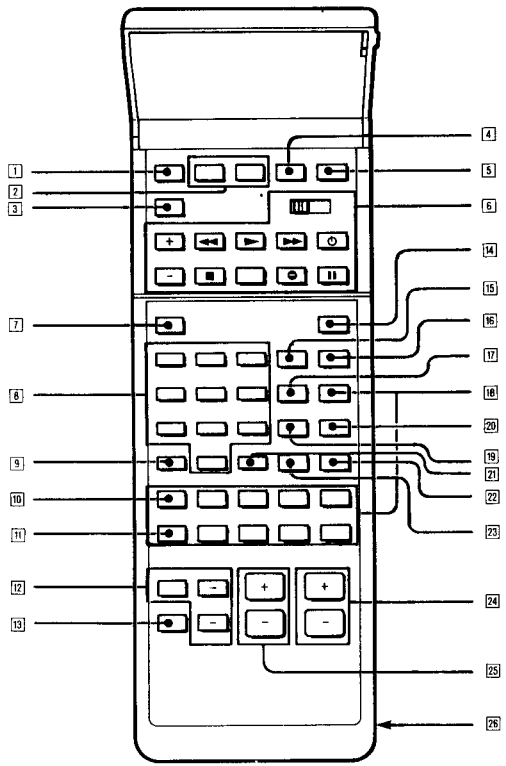
Connectors on the rear

P Euro-AV-connector 21-pin 2/2
For connecting a VTR, 8 mm video camera recorder, a video disc player or in general devices with an S-Video-output.

Q Euro-AV-connector 21-pin 1
For connecting a VTR, a computer etc. with RGB output.

R Audio-output-jacks (phono jacks)
For connecting audio equipment, e.g. an amplifier, so that the sound will be output at the audio equipment. In this case the volume is adjustable on the TV set.

S Aerial terminal



ON THE REMOTE COMMANDER
On the set there is a Remote Control detector Ⓑ, which receives the signals of the Remote Commander.

[1] **Preset-button** Used for selecting the Preset mode. See »TO PRESET CHANNELS«.

[2] **Tuning +/– buttons**
a) Preset mode: Used for tuning in stations in the Automatic Station Search: See »TO PRESET CHANNELS«.
b) TV-mode: Used for fine-tuning a station. See »ADDITIONAL FUNCTIONS«.

[3] **C₀₀ button (Clear)**
Used for clearing programme positions, so that the position will be skipped when the PROGR +/– buttons [24] are pressed. See »TO PRESET CHANNELS«.

[4] **◇ Store button:** Used for storing channels. See »TO PRESET CHANNELS«.

[5] **TV-system-select-button**
This button has no function.

[6] **Video selector and video operation buttons**
Used for operating Sony video equipment. For details see »OPERATING OTHER EQUIPMENT«.

[7] **Mute button**
By pressing this button the sound of the set will be switched off and by pressing it once more the sound will be restored.

[8] **Number buttons**
a) Used to select programme positions or to input channel numbers (in the preset mode).
b) If the set is in the standby mode, press one of the number buttons to switch it on.
c) After pressing the output select button the buttons 1–2 can be used to select the different output connectors.

[9] **-/-- Button**
In case of two digit numbers, press first this button and then the two respective number buttons [8].

[10] **Button for On-screen display**
By pressing this button, information about the station tuned-in will be indicated on the screen. The indications will disappear after some seconds with the exception of the programme number and label, which will stay on the screen until the button is pressed once again.

[11] **Time button**
In TV-mode: If teletext service is broadcast on the selected channel, press this button to display the current time on the screen and once again to make it disappear.

[12] **+/– Buttons for picture and sound adjustments**
a) TV-mode:
The picture and sound adjustments are stored as standard values. You have, however, the possibility to change them to your individual liking. Press the button repeatedly until the required item is indicated in the on-screen display: contrast, colour, brightness, hue (only for NTSC colour system), bass, treble or balance. You can adjust the settings by pressing the + or – button.
b) Preset-mode: Use these buttons to name a station. See »TO PRESET CHANNELS«.

[13] **→●← Reset-button**
By pressing this button the picture and sound adjustments are reset to the factory-set levels.

[14] **Standby-button**
Press this button to switch the set into standby-mode. You can switch it on again by pressing the TV-button [16] or one of the number buttons [8]. To return to the teletext mode, press [18] button. There will be a slight delay before the picture is restored.

Note

Use the Standby-button [14] only when switching the set off for a short period of time. If the set will not be used for a longer span of time, switch it off by using the Power switch Ⓐ.

[15] **Input-Select-Button**
Press this button to select the audio- or video-signals input at the various input connectors. With each pressing of the button a different connector is selected. The following indications will appear sequentially:
1 → (RGB) → 2 → 2 → 3
TV Mode ◄

[16] **TV-Button**
When pressing this button the set returns from standby, video input- or teletext mode to the TV-mode.

[17] **Output-Select-Button**
Press this button to select the audio- or video signals to be output at the / connector.
With each pressing of the button a different output source will be selected. The following indications appear sequentially:
1, 2, 3, TV

[18] **Teletext operation buttons**
These buttons are used for teletext operation. See »VIEWING TELETEXT«.

[19] **Loudness button**
By pressing this button the high and low tones will be emphasized. Press the button again to restore the normal sound. The indications on the screen will be (ON) or (OFF).

[20] **A/B button**
To select the audio channel of bilingual programmes. Usually the dubbed version is broadcast on channel **A** and the original sound is broadcast on channel **B.**
In the video input mode (Euro-AV-connectors) this possibility of selecting channels also exists for stereo VTR connection.

[21] **C (Channel select) button**
Use this button for direct channel tuning in the TV-mode. See »ADDITIONAL FUNCTIONS«.

[22] **This button has no function on this set.**

[23] **Space sound button**
Press this button to obtain special acoustic effects. Press it again to restore the normal sound. The indications on the screen will be (on) or (off).

[24] **PROGR +/– buttons**
TV-mode: Use these buttons to scan the available programmmes up- or downwards.
Preset mode: Use these buttons to scan the available channels up or downwards.

[25] **+/– buttons for adjusting the volume**

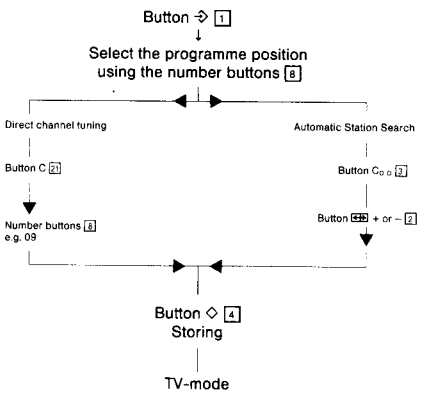
[26] **Battery compartment (on the rear)**

1-2. TO PRESET CHANNELS

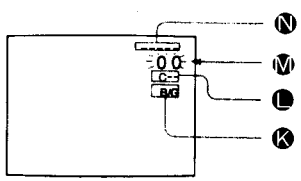
Use the buttons on the Remote Commander for presetting. In total there are 60 programme positions at your disposal for storing channels.
There are two different ways of tuning in channels:

1. Direct Channel Tuning
If you know the channel number of a station you can input it directly.

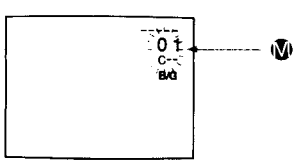
2. Automatic Station Search
The set searches automatically for stations.


Button ⇨ 1
Select the programme position using the number buttons 8
Direct channel tuning
Automatic Station Search
Button C 21
Button C○○ 3
Number buttons 8 e.g. 09
Button ◀▶ + or – 2
Button ◇ 4 Storing
TV-mode

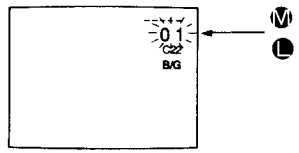
1. Direct Channel Tuning
1. Press the Preset button ⇨ 1. You are now in the preset mode of the set. The programme number in the on-screen display (M) starts blinking.



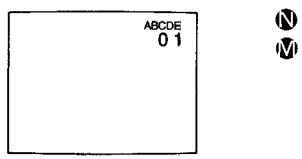
2. With the buttons PROGR +/– 24 or the number buttons 8 you can select the programme position. In case of two-digit numbers, first the button -/-- 9 and then the two number buttons.



3. Press button **C** 21. The indication »C« and the channel number start blinking in the display (L). Select the channel number with two digits (e.g. 22) using the number buttons 8



4. Press the button ◇ 4 in order to store the channel and to return to the TV-mode.



If you want to store further channels, repeat the steps 1 to 4.

2. Automatic Station Search

1. Press button ⇨ 1. You are now in the preset mode of the set. The programme number in the on-screen display (M) starts blinking.

2. With the PROGR buttons +/– 24 or the number buttons 8 you can select the programme position. In case of two-digit numbers, first press button -/-- 9 and then the two number buttons.

3. If there is already a stored station on the selected programme position, press button **C** 3.

4. Press one of the tuning buttons ◀▶ +/– 2 to start the station search. The search will be interrupted as soon as a station is tuned in. Press the tuning buttons repeatedly until you find the desired station.

5. If you have found the desired station, press button ◇ 4. Now the selected station is stored and you are back in the TV-mode.

6. If you want to store further stations, repeat the steps 1-5.

Skipping of unused programme positions
Using button **C**○○ 3 you have the possibility to skip unused programme positions (e.g. without a stored station), when pressing the buttons PROGR +/– 24 on the Remote Commander.

1. Press button ⇨ 1. You are now in the preset mode of the set.

2. Use the buttons PROGR +/– 24 to select a programme position, which you want to have skipped.

3. Press button **C**○○ 3.

4. Press button ◇ 4 to store the cleared programme position and to return to the TV-mode.

The skipped programme position still appears when you press the number buttons 8 on the Remote commander.

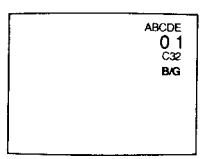
If you want to name a station
After presetting the stations you have the possibility to name them. The selected name will appear in the on-screen display (N).

1. Press the preset button ⇨ 1.

2. Press the button ABC 12. The first column of the station name starts blinking. Press either button + or – 12 and select the desired character (number or letter, 0-9, A-Z, or – for a blank space).

3. Press button ABC 12 again. Now the second column starts blinking and you can select the second character.
In this way five characters can be selected.

4. Press button ◇ 4 to store the station name.



Notes

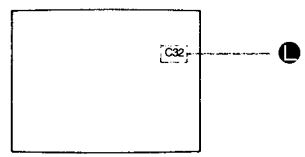
- If you press the preset button ⇨ 1 instead of button ◇ 4 the set will return to the TV-mode without storing the channels.
- If you press a wrong programme or a channel number, an »x« will be displayed on the screen.
- When pressing two number buttons, the second number button should be pressed within 5 seconds after the first one, otherwise the operation will be cancelled.

ADDITIONAL FUNCTIONS

Direct Channel Tuning in the TV-mode
You have the possibility to tune in channels directly when the set is in the TV-mode without storing these channels.
Example: If you tune in channel number 32 and then switch the set off or change the programme position, this channel will be cancelled.

1. Press the button **C** 21. In the display (L) the indication »C« will appear.

2. Select the channel number with two digits using the number buttons 8 (e.g. for channel 4 press first 0, then 4). The indication on the screen will disappear within some seconds.



Manual Fine Tuning
If the reception of a channel is not satisfactory, you have the possibility to deactivate the Automatic Fine Tuning, which is usually in operation during presetting in order to tune in the best possible picture.
Press one of the tuning buttons ◀▶ +/– 2 to fine-tune a channel. The Automatic Fine Tuning will be restored when the respective programme position is pressed once again.

The set is capable of receiving NICAM, which is a newly developed digital stereo broadcast system.
NICAM programmes are broadcast in three ways: stereo, bilingual or monoaural sound besides the regular (FM mono) sound, and you can select the sound you want to hear by pressing the A/B button [20].
Each time the button is pressed, the sound changes sequentially, as indicated with arrows in the following chart.

NICAM sound being broadcast	The sound you hear (Select with the A/B button [20].)
Stereo	Stereo → Regular → Stereo (etc.)
Bilingual	A → B → Regular → A (etc.)
Monoaural	A → Regular → A (etc.)

Whenever a NICAM broadcast is received, the ⊳◁ indication appears on the screen and disappears after a few seconds.

When the NICAM programme ends, the ⊳◁ indication appears for a few seconds.

The sound being broadcast	The selected sound	◌◌ indicators (D)		NICAM indication on the screen
		A	B	
NICAM + Regular	Stereo	x	x	x
	A	x	o	
	B	o	x	
	Regular	o	o	
Regular	Regular	o	o	o

x means that the indicator (D) lights up or the indication appears.

o means that the indicator does not light up or the indication is not displayed.

1-3. VIEWING TELETEXT

To view the teletext service, use the Remote Commander.
The buttons for teletext operation are indicated in green.

Operation

1 Select the TV channel for the desired teletext service. If the signal is weak, teletext errors often occur.
2 Press ▣/◩ (TEXT/MIX) to display the teletext service.
3 Key in the three digits of the desired page using the number buttons. If an error is made, complete the three-digit sequence by keying in any digit. Then, re-enter the correct page number.

The requested teletext page is displayed.

To return to the TV mode, press TV [16] on the Remote Commander.

The teletext service can be displayed directly from the standby mode by pressing ▣/◩ (TEXT/MIX).

To receive the teletext service of a different TV channel
1 Press TV [16] to return to the TV mode.
2 Select the desired TV channel.
3 Press ▣/◩ (TEXT/MIX).

Note

Buttons not referred to in the text do not operate.

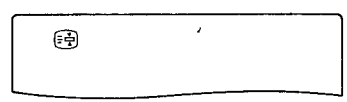
To request the index page
Press ◧ (INDEX).
If the necessary signal is not being broadcast, page 100 is displayed.

To access the next or preceding page
Press ▷▷ (PAGE +) or ◁◁ (PAGE –).

To superimpose the teletext display on the picture (MIX)
Press ▣/◩ twice from the TV mode.
Press ▣/◩ again to return to the TEXT display.

To suppress the teletext display so that the picture is restored
Press ✕ (text clear). This button can be operated from both the text and mix displays.

To prevent a teletext page from being updated/changed
Press ⊕ (HOLD). The HOLD symbol appears on the screen.
To resume normal teletext reception, press ▣/◩ (TEXT/MIX).

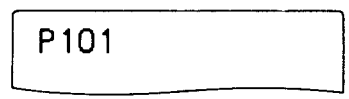


To resume normal teletext reception, press ▣/◩.

To enlarge the teletext display
Press ⊞ once to enlarge the upper half of the display; press again to enlarge the lower half of the display. And press again to return to the normal display.

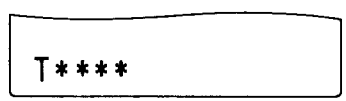
To reveal concealed information such as answers to a quiz
Press ◪ (REVEAL).
Press again to conceal the answers.

To watch the TV programme while waiting for a requested page to be displayed
1 Request the new page.
2 Press ✕ to watch the TV programme.
The requested page number and other data appear at the top of the screen. When the requested page has been captured, the page number is displayed in the top left hand corner of the screen.

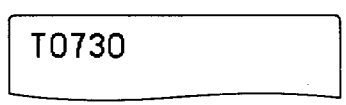


To view this page, press ▣/◩.

To have a requested page displayed at a pre-determined time
1 Request a time coded page (e.g. alarm page).
2 Press ◪ (TP ON).
" T✱✱✱✱ " will appear at the bottom of the screen.



3 Enter your request time with the number buttons, using four digits. For example, 07.30:



To watch the TV programme until the requested time, press ✕ (TEXT CL). At the requested time, the page number will be displayed at the bottom of the screen.
To view this page, press ▣/◩.
To cancel the request, first ensure that the teletext page is displayed, then press ◪ (TP OFF).

FASTEXT Operation

FASTEXT Teletext enables you to access pages quickly and conveniently with one key operation.

When a FASTEXT page is broadcast a colour coded menu will appear at the bottom of the screen. Each coloured prompt relates to the coloured keys on the Remote Commander. Pressing one of these will select the page described by the prompt.

Selection may also be made by entering the three digit page number in the normal way.

Correct FASTEXT operation relies on the necessary signals being transmitted by the Broadcasting Authorities. It is possible that some Broadcasters will not support this transmission.

If FASTEXT is not transmitted, the decoder will operate as outlined above.

1-4. OPERATING OTHER EQUIPMENT

To view the input picture
Press the ⊕ 15 button repeatedly until the desired input signal indication appears on the screen.

⊕ **1:** to view the audio and video signal input through the ⊕ **1** connector on the rear.

⊕ **1:** to view the RGB signal (i.e. from a computer, etc.) input through the ⊕ **1** connector.

⊕ **2:** to view the audio and video signal input through the ⊕ **2/S** connector on the rear.

S **2:** to view the S video signal (from a VTR equipped with an S video output) input through the ⊕ **2/S** connector.

⊕ **3:** to view the audio and video signal input through the ⊕ **3** connectors and the audio input jacks ⊕ (yellow, white and red) on the front.

You can also select the desired input mode using the buttons on the front of the set. Select the ⊕ mode with the mode select (P → ◿ → ⊕) button ⓖ then press +/– button.

To return to the TV mode, press the TV-button 16.

To select the signal to be output from the ⊕ 2/S connector
Press the ⊕ button 17 repeatedly until the desired output source is indicated on the screen:

1 ⊕: The audio and video signal input through the ⊕ **1** connectors is output from the ⊕ **2/S** connector.

2 ⊕: The audio and video signal input through the ⊕ **2/S** connector is output from the ⊕ **2/S** connector.

3 ⊕: The audio and video signal input through the ⊕ **3** connectors is output from the ⊕ **2/S** connector.

TV ⊕: The audio and video signal input through the ⊤ aerial terminal (i.e. usually the TV signal) is output from the ⊕ **2/S** connector.

The indication will disappear after a few seconds.

Note

The TV-signal is always output at the EURO-AV connector ⊕ **1.**

To operate Sony video equipment
The video operation buttons 6 on the Remote Commander can operate certain VTRs and video disc players manufactured by Sony.

1. Switch the video selector to the desired position.
VIDEO 1: to operate Sony Betamax VTR and SLV 202 VHS.
VIDEO 2: to operate Sony 8 mm VTR.
VIDEO 3: to operate Sony VHS VTR.
MDP: to operate Sony video disc player including a multi disc player.

2. Press the operation button(s) to start operation.
PROGR +/–: to select the desired programme on the VTR.

▶ : to start playback, or to release the pause mode

■ : to stop the tape or the disc

◀◀ : to rewind the tape from stop mode or to rapidly go back to the desired position on the disc or tape from playback mode

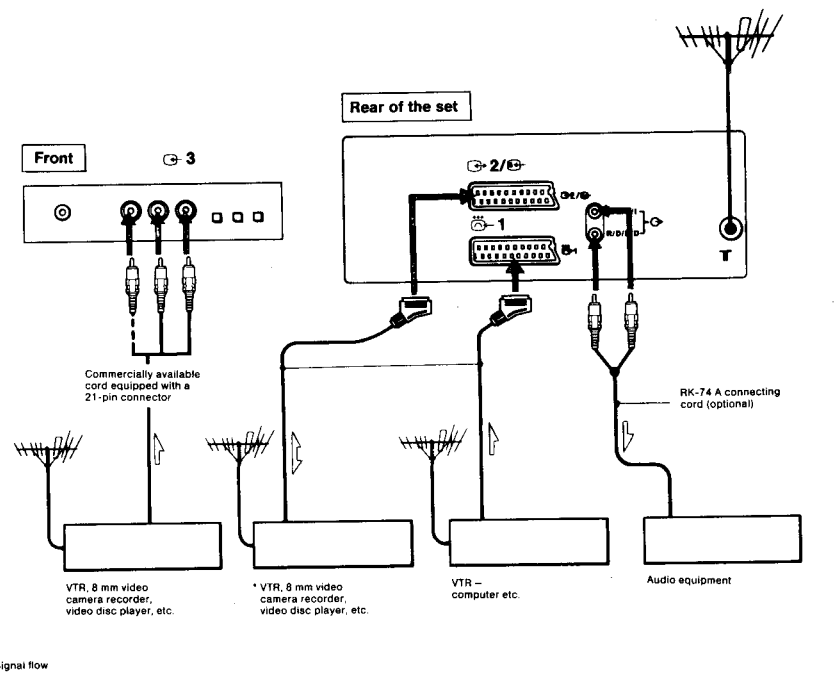
▶▶ : to fast forward wind from stop mode or rapidly advance the tape or disc to the desired position from playback mode

● : to start recording on the VTR
Be sure to press this button and the one on the right simultaneously

⏻ : to switch the video equipment on and off

■■ : to stop the tape or the disc temporarily (pause)
Press again to release pause mode

1-5. CONNECTING OTHER EQUIPMENT


Rear of the set
Front
⊕ 3
⊕ 2/S
⊕ 1
Commercially available cord equipped with a 21-pin connector
RK-74 A connecting cord (optional)
VTR, 8 mm video camera recorder, video disc player, etc.
* VTR, 8 mm video camera recorder, video disc player, etc.
VTR – computer etc.
Audio equipment
Signal flow

* Connect the S video output of the VTR, etc. here.

Notes

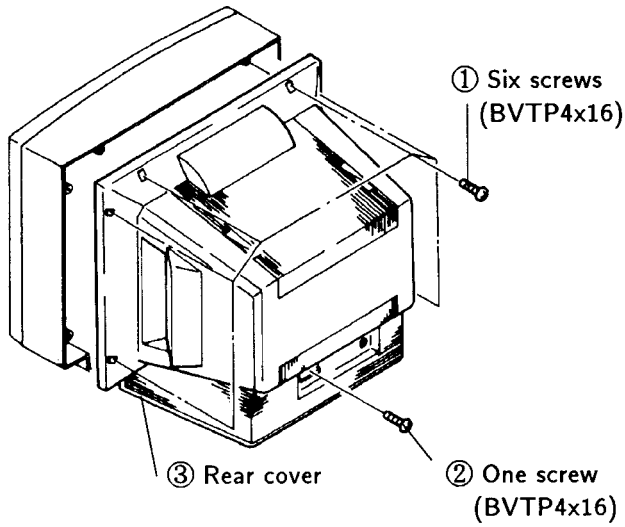
- It is also possible to connect a VTR using the ⊤ terminal. In this case, connect the aerial to the aerial terminal of the VTR.
- Move the VTR away from the TV if the picture or the sound is distorted.
- Computers which have RGB output only can be connected to the ⊕ **1** input connector.

S video input (Y/C input) S
Video signals may be separated into Y (luminance or brightness) and C (chrominance) signals.
Usually these two signals are combined in a VTR and output as one signal, and supplied to a TV. Separation of the Y and C signals prevents them from interfering with one another, thereby improving picture quality (especially in luminance). This set is equipped with a S video input through which these separated signals can be input directly.
Connect the S video output jack on the VTR to the S video input on this set.

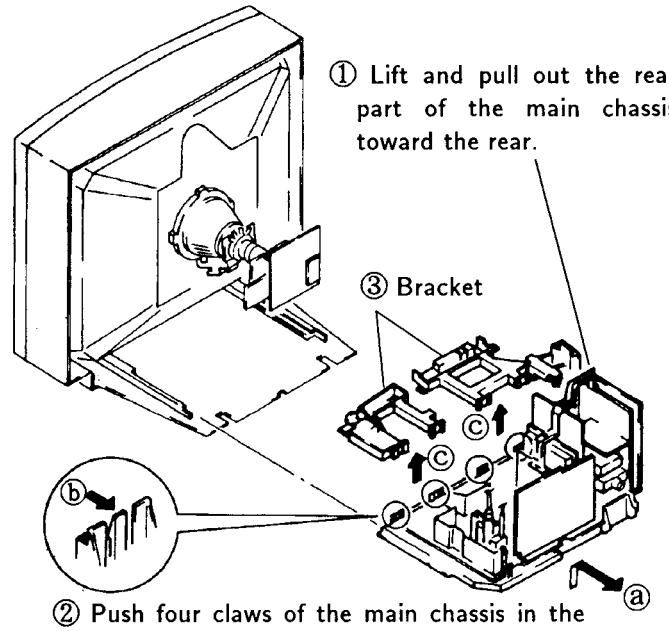
Note: Not all VTR's are equipped with S video output capability. (Refer to VTR operating manual.)

SECTION 2
DISASSEMBLY

2-1. REAR COVER REMOVAL

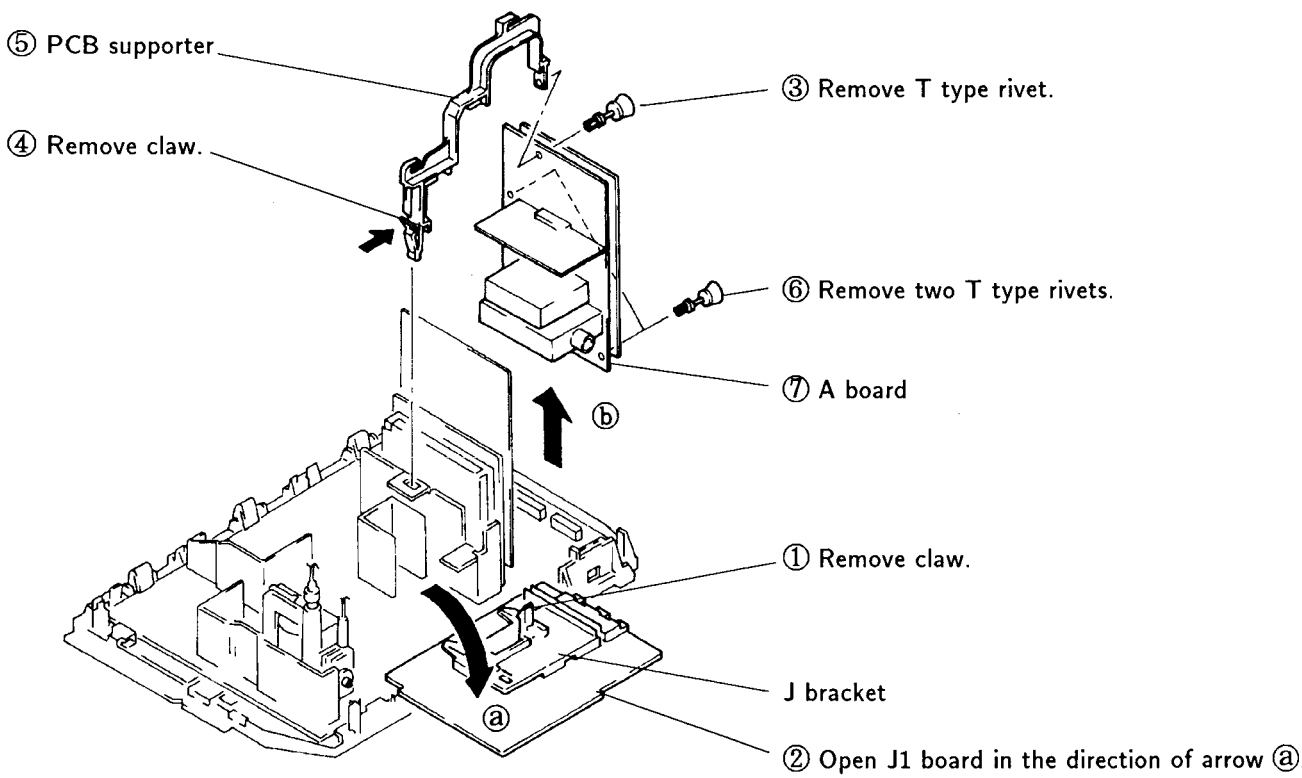


2-2. CHASSIS ASSEMBLY REMOVAL

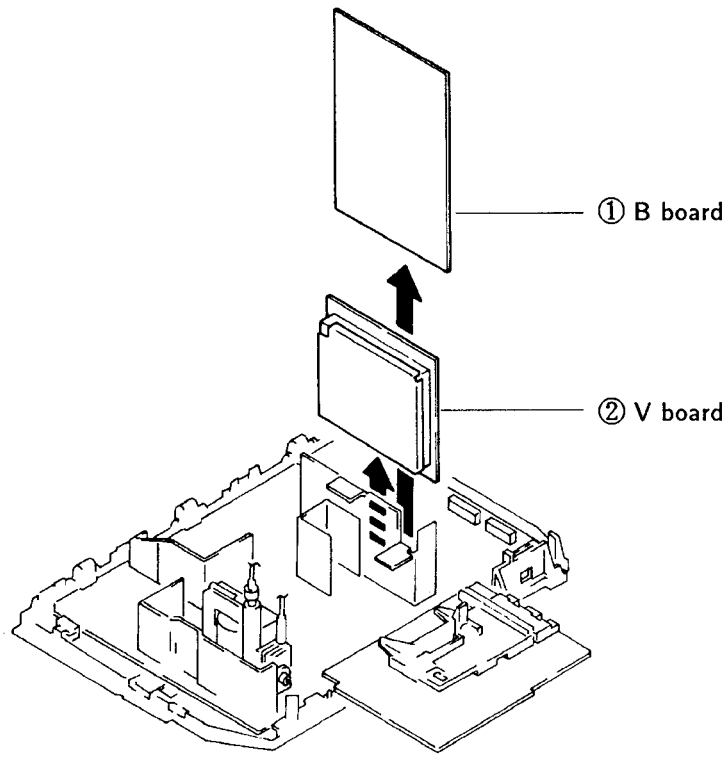


② Push four claws of the main chassis in the direction of arrow and remove the bracket.

2-3. A AND J1 BOARD REMOVAL

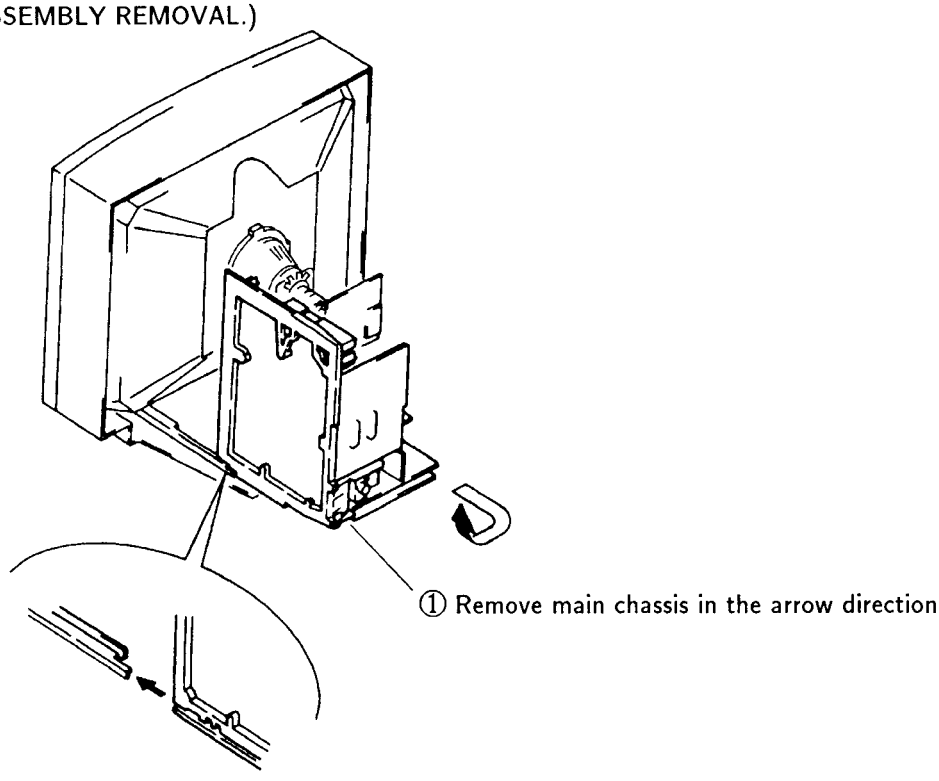


2-4. B AND V BOARDS REMOVAL

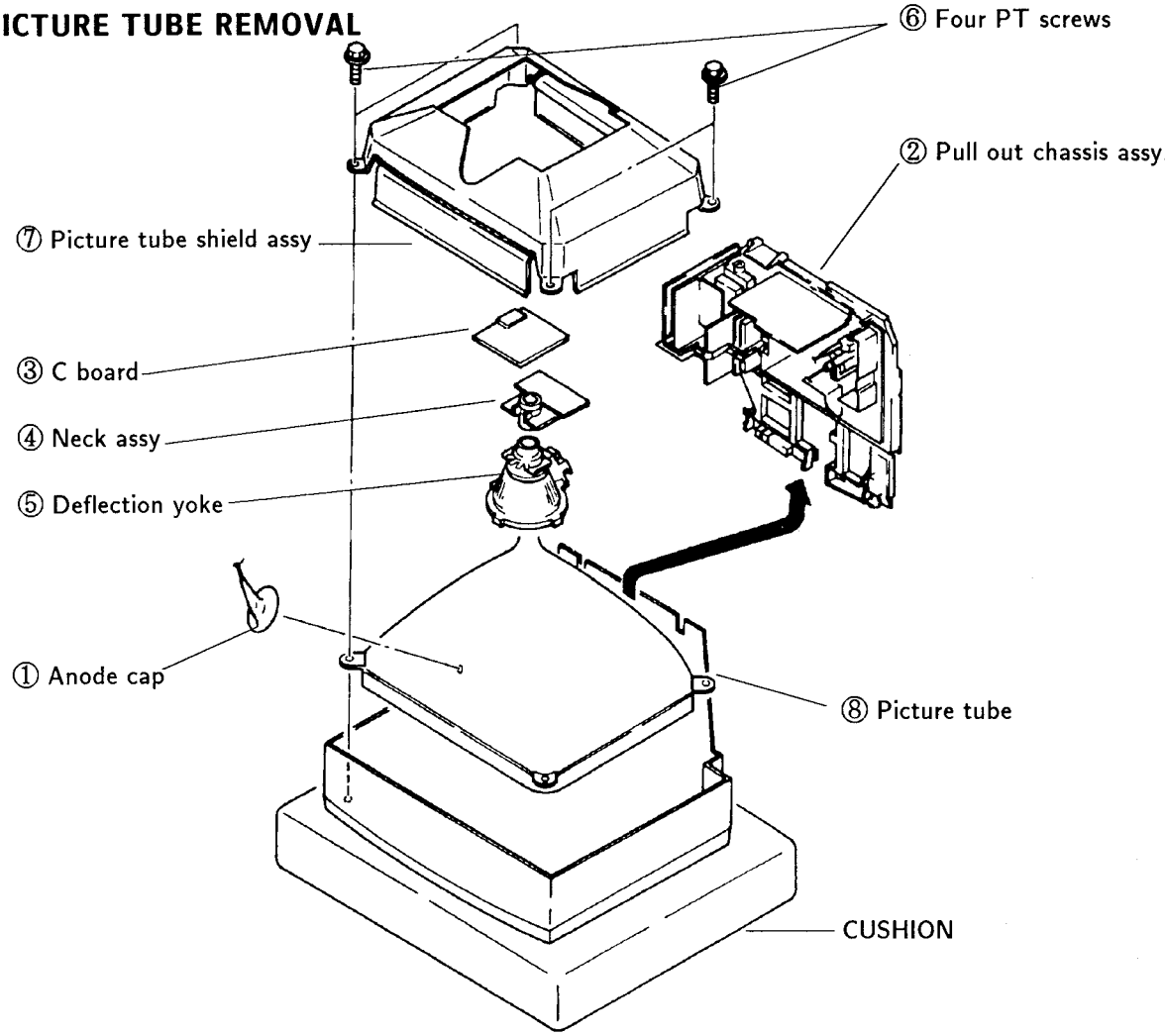


2-5. SERVICE POSITION

* Remove the connector bracket and then perform the following servicing.
(Refer to 2-2. CHASSIS ASSEMBLY REMOVAL.)

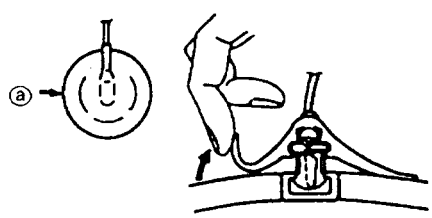


2-6. PICTURE TUBE REMOVAL

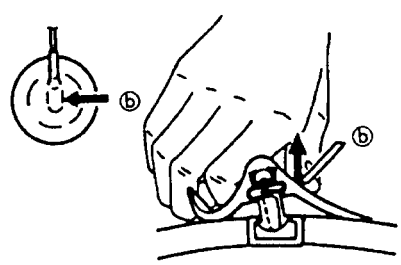


• REMOVAL OF ANODE-CAP

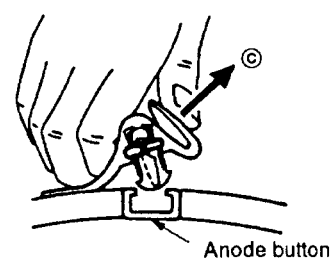
• REMOVING PROCEDURES



① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.



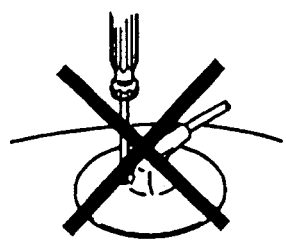
③ When one side of the rubber cap is separated from the anode button, the snode-cap can be removed by turning up the rubber cap and pulling up it in the direction of the arrow ⓒ.

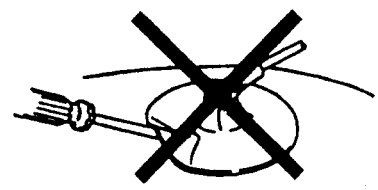
• HOW TO HANDLE AN ANODE-CAP

① Don't hurt the surface of anode-caps with sharp shaped material!

② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.

③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or hurt the rubber.





SECITON 3
SET-UP ADJUSTMENTS

- When complete readjustment is necessary or a new picture tube is installed, carry out the following adjustments.
- Unless there is specific instruction to the contrary, carry out these adjustments with the rated power supply.
- Unless there is specific instruction to the contrary, set the controls and switches this way :
  - ◑ Contrast ·····80%
    (or remote control normal)
  - ☼ Brightness ·····50%
- Carry out the following adjustments in this order:
  1. Beam landing
  2. Convergence
  3. Focus
  4. White balance

Note : Testing equipment required
1. Color bar/pattern generator
2. Degausser
3. DC power supply
4. Digital multimeter
5. Oscilloscope

Preparations :
- In order to reduce the influence of geomagnetism on the set's picture tube face it east or west.
- Switch on the set's power and degauss with the degausser.

3-1. BEAM LANDING

1. Input the white signal with the pattern generator.
   Contrast, Bightness } normal
2. Position neck ass'y as shown in Fig 3-2.
3. Set the pattern generator raster signal to red.
4. Move the deflection yoke to the rear and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side.
   (See Figures 3-1 through 3-3.)
5. Move the deflection yoke forward and adjust so that entire screen is red. (See Figure 3-1.)
6. Switch the raster signal to blue, then to green and verify the condition.
7. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
8. If the beam does not land correctry in all the corners, use a magnet to adjust it.
   (See Figure 3-4.)

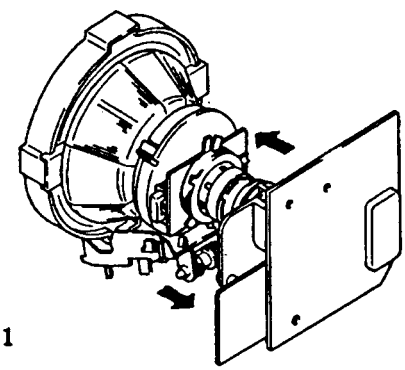
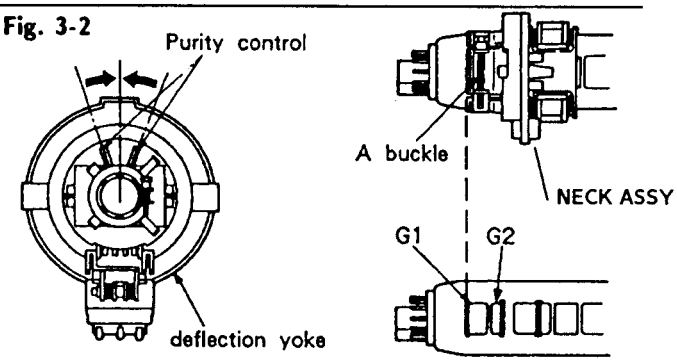


Fig. 3-1

Fig. 3-2



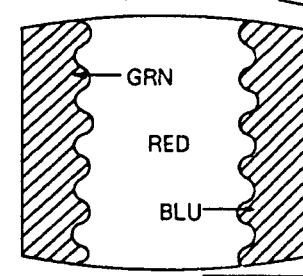


Fig. 3-3

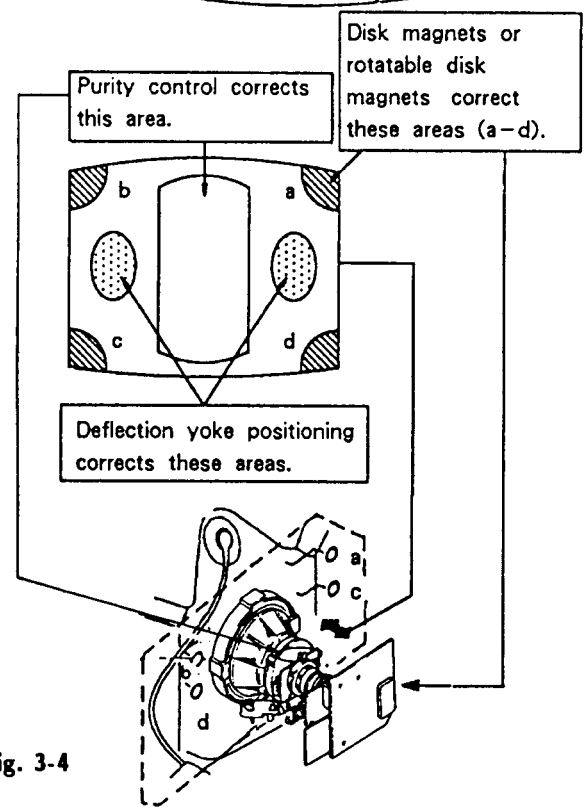


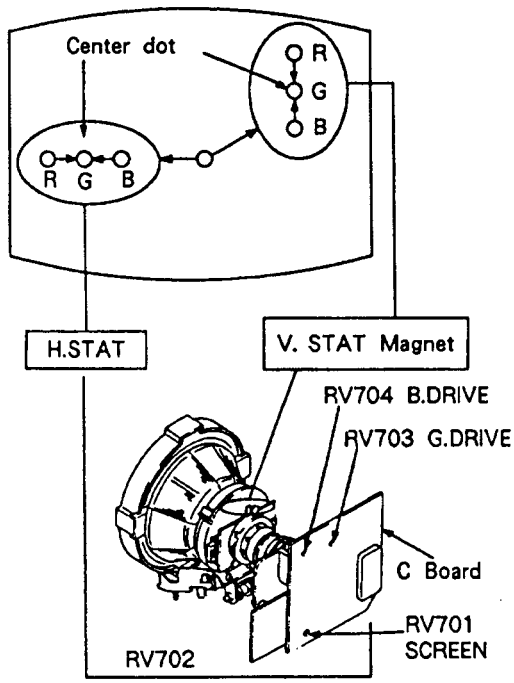
Fig. 3-4

3-2. CONVERGENCE

Preparations :

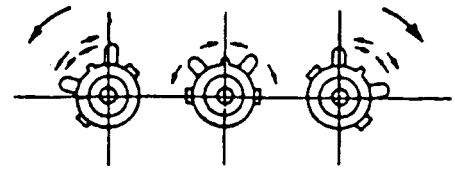
- Before starting this adjustment, adjust the focus, horizontal size, and vertical size.
- Minimize the brightness setting.
- Provide dot pattern.

(1) Horizontal and vertical static convergence

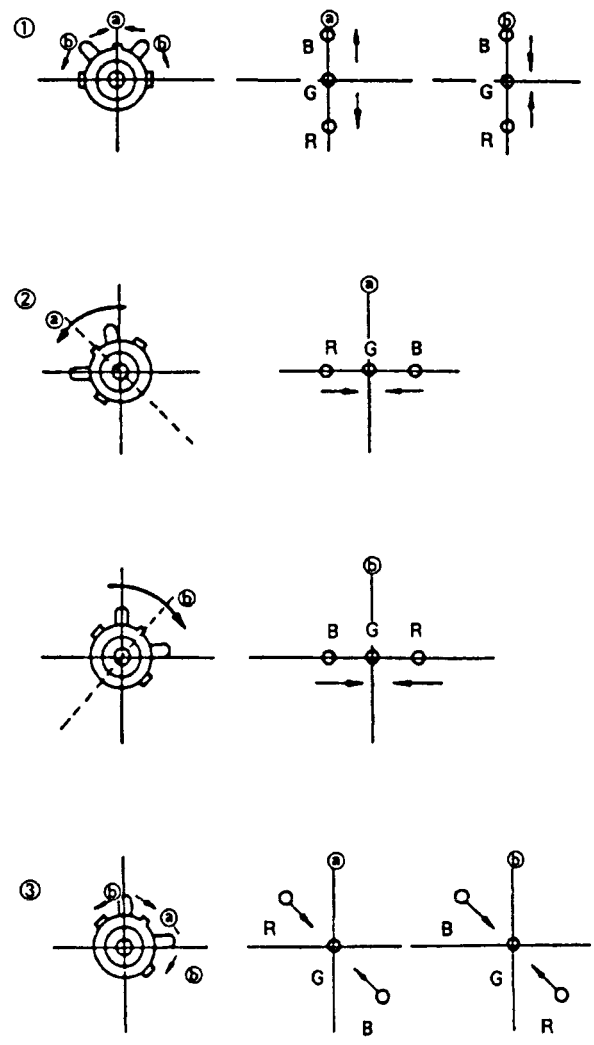


1. (Moving horizontally), adjust the H.STAT control so that the red, green, and blue points are on top of each other at the center of the screen.
2. (Moving vertically), adjust the V.STAT magnet so that the red, green, and blue points are on top of each other at the center of the screen.
3. If the H.STAT variable resistor can not bring the red, green, and blue points together at the center of the screen, adjust the horizontal convergence with the H.STAT variable resistor and the V. STAT magnet in the manner given below.
   (In this case, the H.STAT variable resistor and the V.STAT magnet influence each other's settings.)

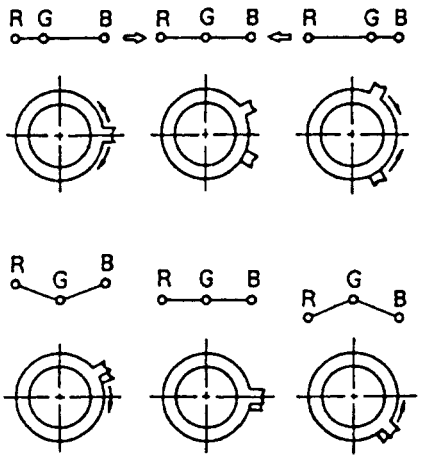
- Tilt the V.STAT magnet and adjust the static convergence by opening or closing the V.STAT magnet.

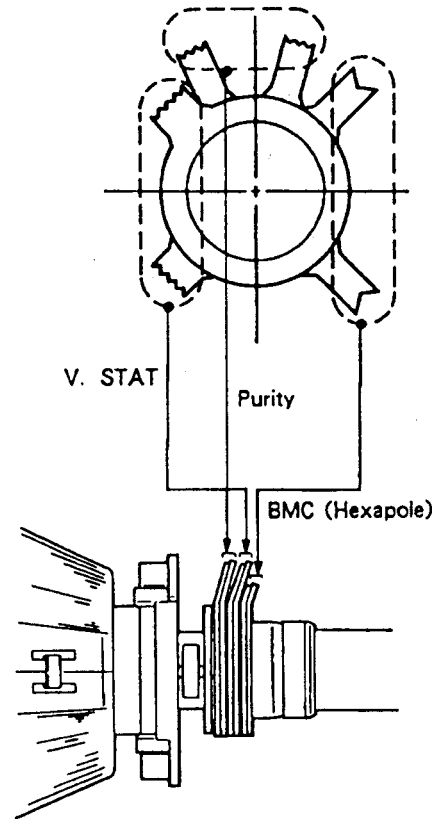


4. If the V.STAT magnet is moved in the direction of the ⓐ and ⓑ arrows, the red, green, and blue points move as shown below.



- Operation of BMC (Hexapole) Magnet





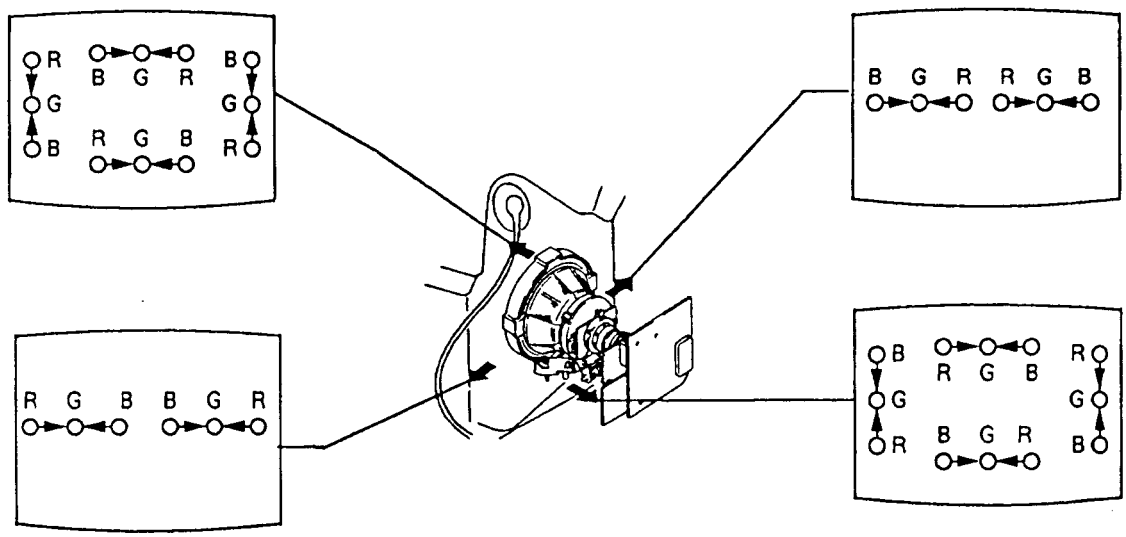
- The respective dot operations resulting from the operation of each magnet are not completely independent, so be sure to perform adjustment while tracking.
  Use the H.STAT VR to adjust the red, green, and blue dots so they coincide at the center of screen (by moving the dots in the horizontal direction).

(2) Dynamic convergence adjustment

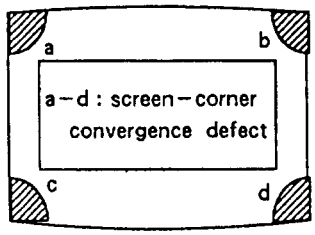
Preparations :

Before starting this adjustment, adjust the horizontal static convergence and the vertical static convergence.

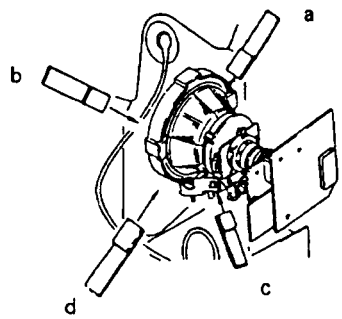
1. Slightly loosen the deflection yoke screws.
2. Remove the deflection yoke spacer.
3. Move the deflection yoke as shown in the figure below and optimize the convergence.
4. Tighten the deflection yoke screws.
5. Install the defelection yoke spacer.



(3) Screen corner convergence



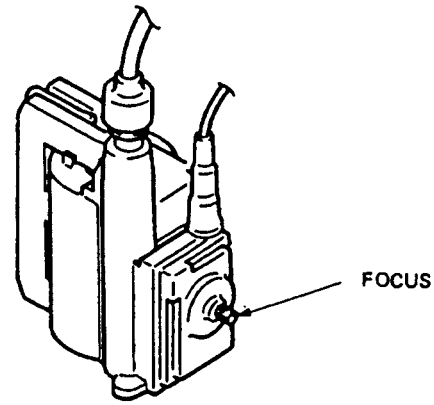
Install the permalloy assembly for the section with faulty.



Permalloy

3-3. FOCUS

Adjust the focus to optimize the screen.



3-4. WHITE BALANCE

[Screen G2 setting]

1. Input the dot signal from the pattern generator.
2. Set the picture brightness control to its lowest level.
3. Apply 170V DC to the R, G, and B cathodes with an external power supply.
4. While watching the picture, adjust G2 control RV701 (Screen) to the point just before the return lines disappear.

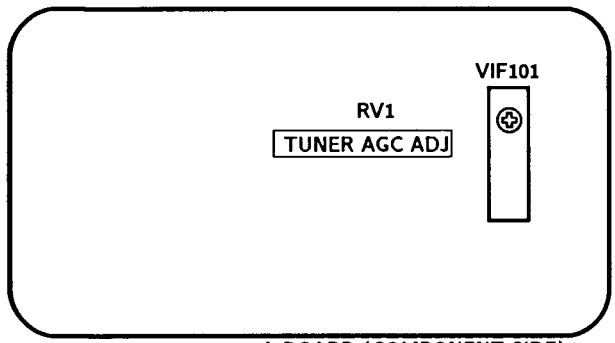
[White balance adjustment]

1. Input an all-white signal from the pattern generator.
2. Set the picture brightness and color controls to their normal levels.
3. Use the RV704 (B Drive) and RV703 (G Drive) to adjust white balance.

In the adjustments below, have the picture color and brightness settings at their normal levels unless there is a specific instruction to the contrary.

SECTION 4
CIRCUIT ADJUSTMENTS

4-1. A BOARD ADJUSTMENT

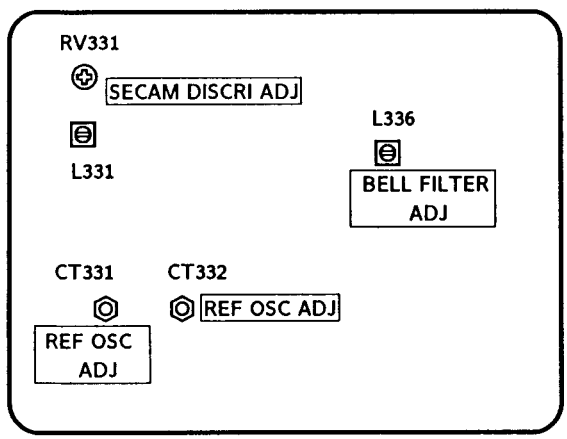


A BOARD (COMPONENT SIDE)

TUNER AGC ADJUSTMENT (VIF101, RV1)

1. Align with an appropriate signal between stations.
2. Adjust RV1 so that snow noise and cross modulation just disappear from the picture.

4-2. B BOARD ADJUSTMENTS



B BOARD (COMPONENT SIDE)

REFERENCE OSCILLATOR ADJUSTMENT (CT332 8.8MHz)

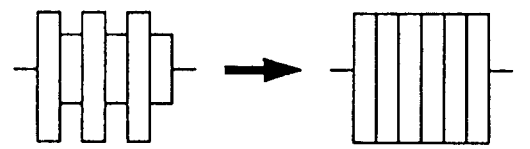
1. Input a PAL color bar signal.
2. Ground pin ⑰ of the IC331.
3. Adjust CT332 to obtain synchronization.

REFERENCE OSCILLATOR ADJUSTMENT (CT331 7.16MHz)

1. Input an NTSC color bar signal.
2. Ground pin ⑰ of IC331.
3. Adjust the CT331 to obtain synchronization.
4. Remove the jumper grounding pin ⑰ of IC331.

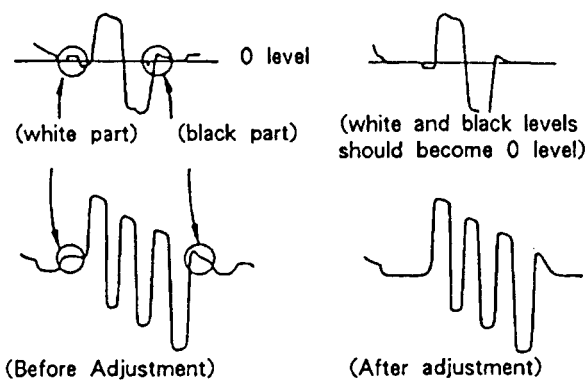
BELL FILTER ADJUSTMENT (L336)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to the emitter of Q335.
3. Adjust L336 so that the waveform is flat.

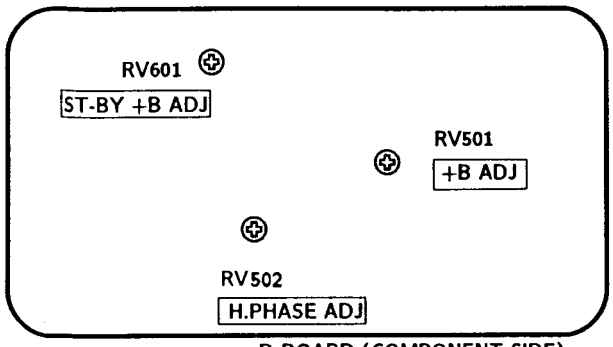

<Before Adjustment> <After Adjustment>

DISCRIMINATION ADJUSTMENT (RV331 and L331)

1. Input a SECAM color bar signal.
2. Connect the oscilloscope to pin ① of IC331.
3. Adjust RV331 so that the white and black sections of the waveform at pin ① come to the 0 level.
4. Connect the oscilloscope to pin ③ of IC331.
5. Adjust L331 so that the white and black sections of the waveform at pin ③ come to the 0 level.



4-3. D BOARD ADJUSTMENTS



D BOARD (COMPONENT SIDE)

+B ADJUSTMENT (RV501)

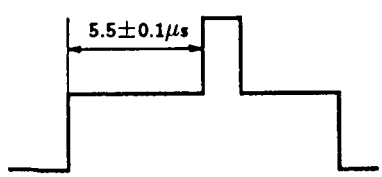
1. Connect the digital multimeter to TP91.
2. Adjust RV501 to obtain 135±0.2V.

ST-BY +B ADJUSTMENT (RV601)

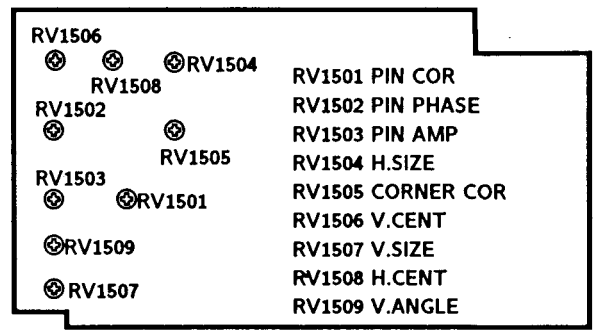
1. Put the system into ⏻ standby mode (remote commander).
2. Connect the digital multimeter to TP91.
3. Adjust RV601 to obtain 135±3V.
4. Take the system out of ⏻ standby mode (remote commander).

H.PHASE ADJUSTMENT (RV502)

1. Input a PAL color bar signal.
2. Set the picture and brightness controls to their normal levels.
3. Set RV1508 (H.CENT) to its mechanical center.
4. Connect the oscilloscope to pin ⑪ (SCP) of IC 501.
5. Rotate RV502 to adjust to 5.5±0.1μs.

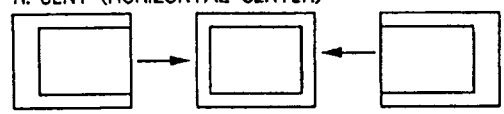


4-4. J1 BOARD ADJUSTMENTS

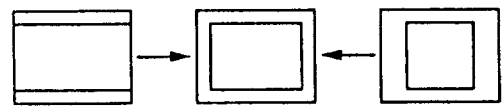


J1 BOARD (COMPONENT SIDE)

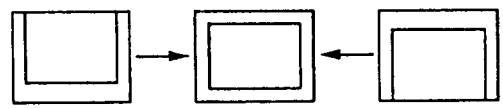
RV1508
H. CENT (HORIZONTAL CENTER)



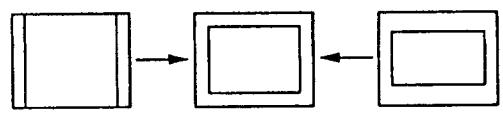
RV1504
H. SIZE (HORIZONTAL SIZE)



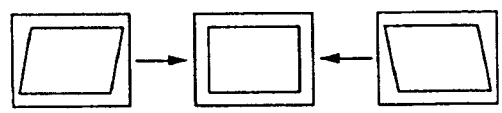
RV1506
V. CENT (VERTICAL CENTER)



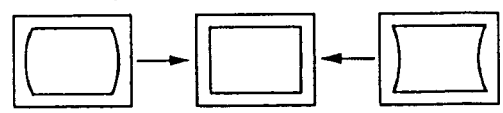
RV1507
V. SIZE (VERTICAL SIZE)



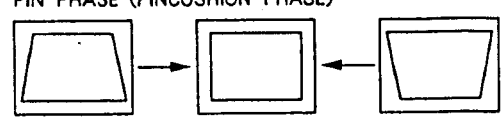
RV1509
V. ANGLE (VERTICAL ANGLE)



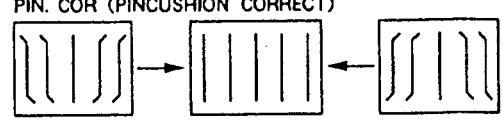
RV1503
PIN AMP (PINCUSHION AMPLIFIER)



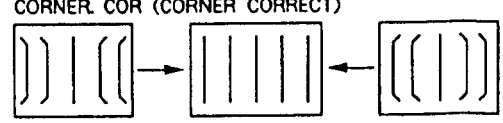
RV1502
PIN PHASE (PINCUSHION PHASE)



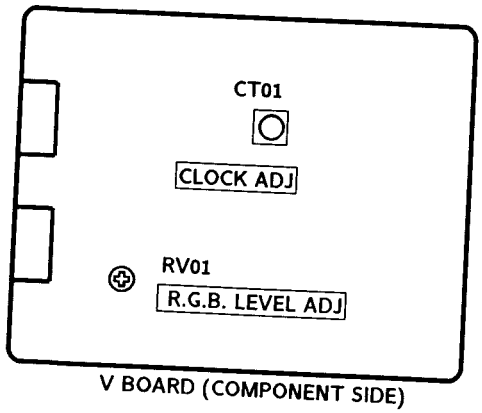
RV1501
PIN. COR (PINCUSHION CORRECT)



RV1505
CORNER COR (CORNER CORRECT)



4-5. V BOARD ADJUSTMENTS



V BOARD (COMPONENT SIDE)

CLOCK ADJUSTMENT (CT01)

1. Remove the V-1 connector pin③ .
2. Put the system into text mode.
3. Adjust CT01 so that the picture does not move.

RGB LEVEL ADJUSTMENT (RV01)

1. Maximize the picture setting.
2. Adjust RV01 so that the RGB output is 0.75V.

4-6. SECONDARY ADJUSTMENT

SUB BRIGHTNESS ADJUSTMENT

1. Set the system to receive a test pattern.
2. Press →•← on the remote commander to put the system into normal mode.
3. Switch off the power.
4. While depressing the adjusting buttons + and − simultaneusly, turn on the power. (SUB mode is obtained)
5. Minimize the ◑ contrast setting.
6. Adjust the ☼ brightness control so that the gray scale 0 IRE section is cut off completely and the 20 IRE section is barely glowing.
7. Depress the ◇ (store) button of the remote commander.
   (SUB mode is released)

If there is no test color pattern

1. Set the system to receive a color pattern.
2. Press on the remote commander to put system into normal mode.
   Set the ◕ color to its normal state.

3-5. are the same as above.

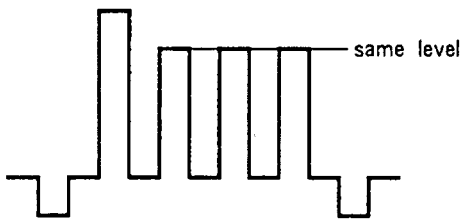
6. Since 20 IRE is nearly blue, adjust the ☼ brightness control so that the blue barely glows.

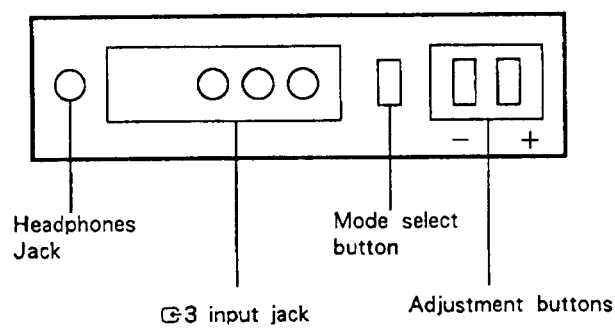
7. is the same as above.

8. Press →•← on the remote commander to put the system into normal mode.

SUB COLOR ADJUSTMENT

1. Set the system to receive color bars.
2. Press →•← on the remote commander to put the system into normal mode.
3. Cut off the power.
4. While depressing the adjustment buttons + and − simultaneusly, turn on the power. (SUB mode is obtained)
5. Adjust the color control so that the B out waveform (pin ② of C board connector CNC72) is as shown in the figure below.
6. Depress the ◇ (store) button of the remote commander. (SUB mode is released)

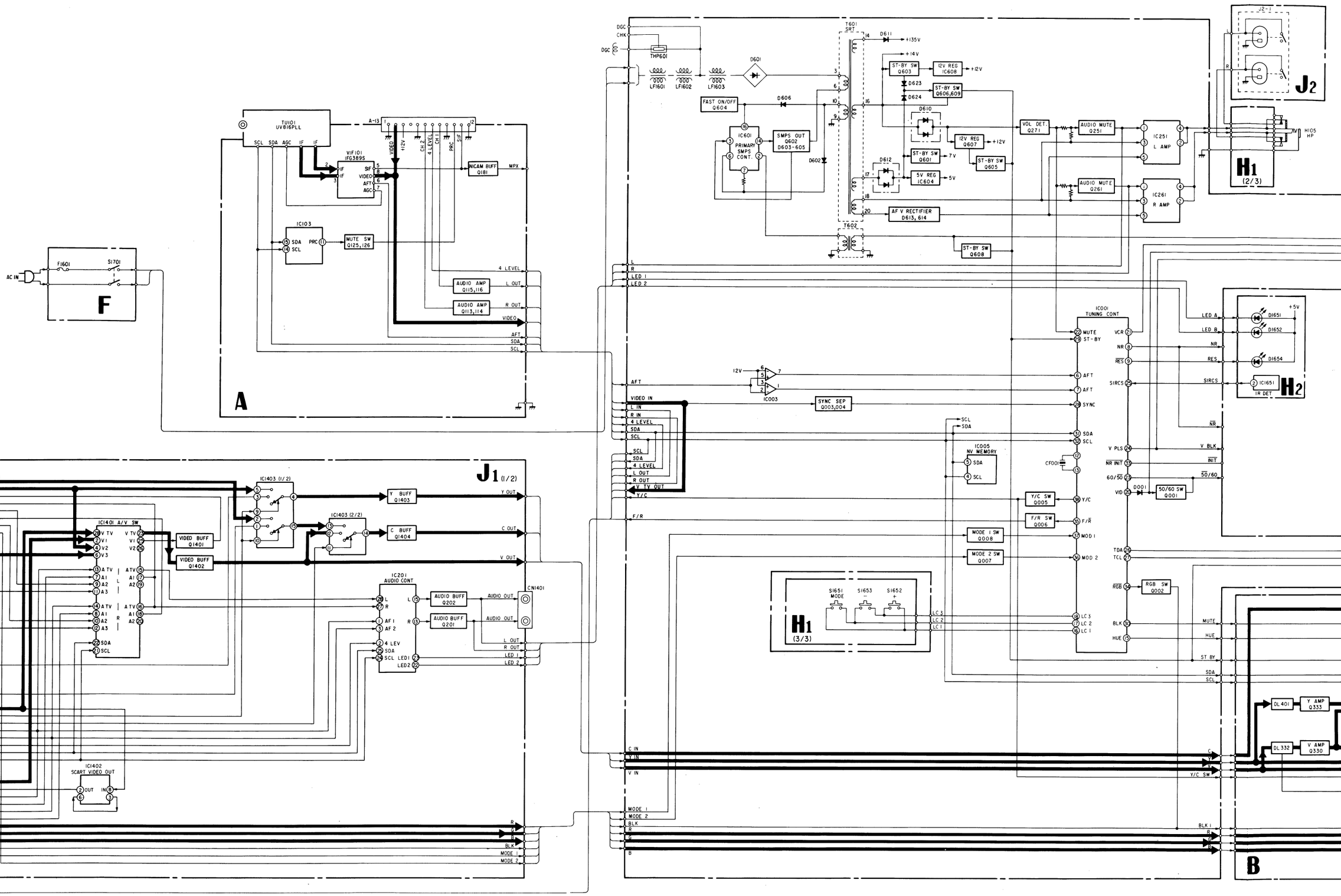


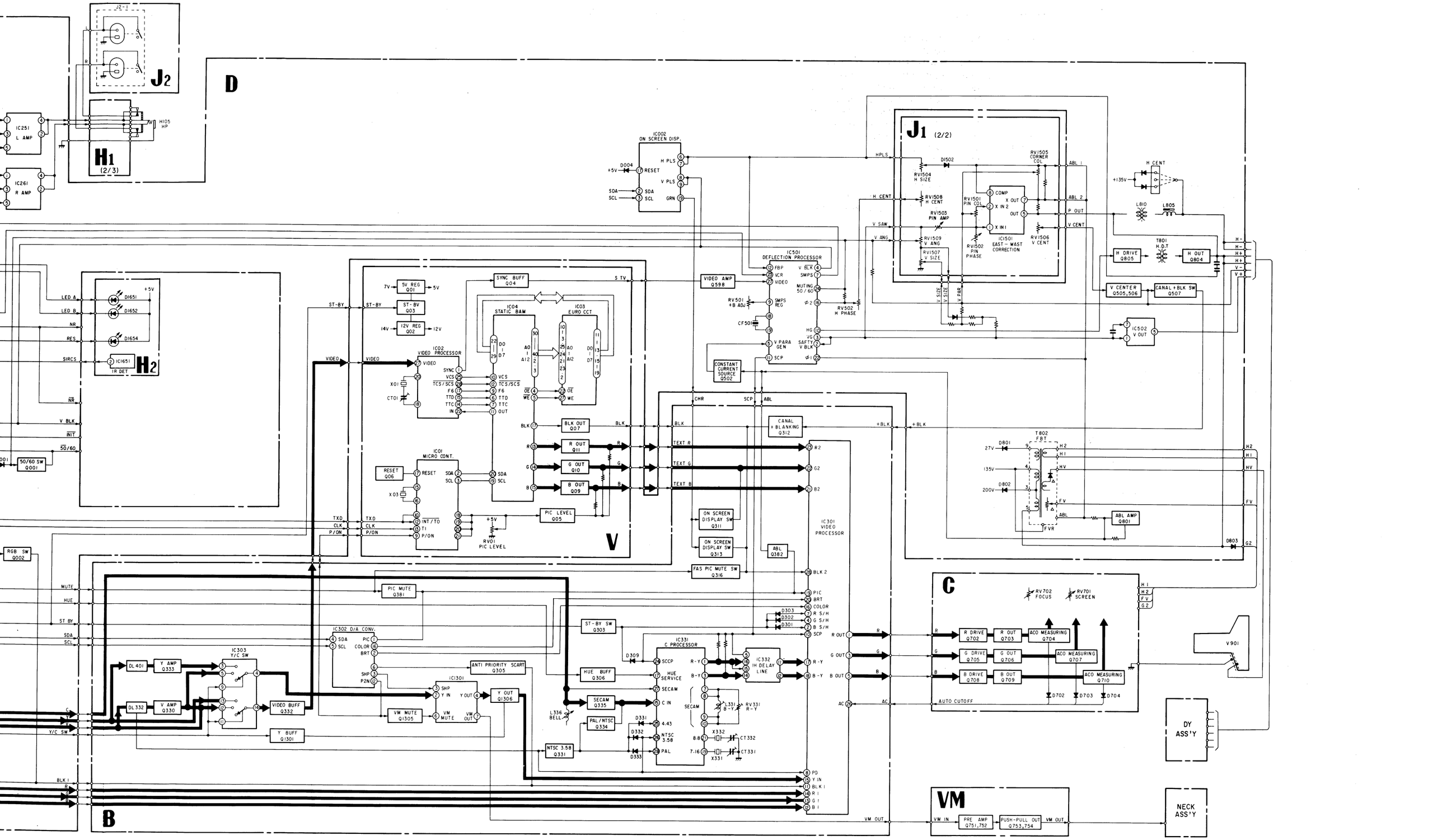


MEMO

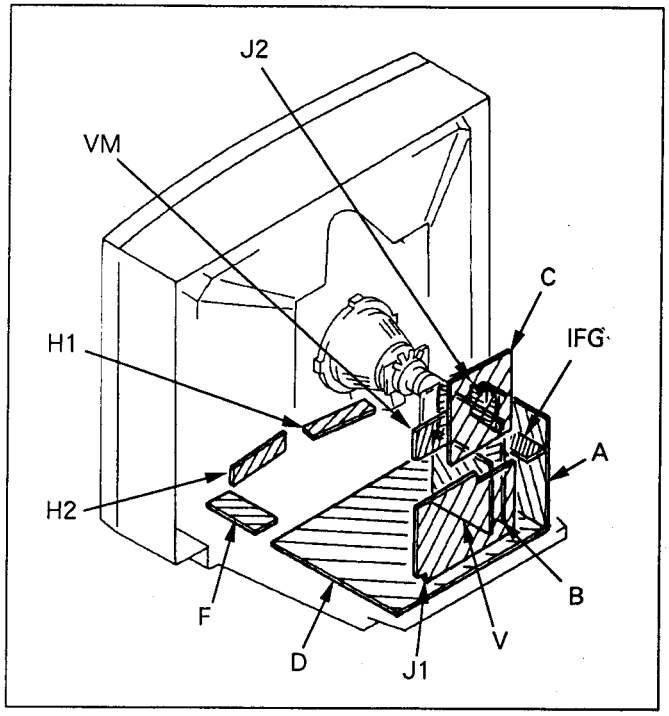
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAM




D
J2-1
J2
H1
(2/3)
H105
HP
IC251
L AMP
IC261
R AMP
J1 (2/2)
IC002
ON SCREEN DISP.
D004
RESET
SDA
SCL
H PLS
V PLS
GRN
HPLS
H CENT
V SAW
V ANG
D1502
RV1504
H SIZE
RV1508
H CENT
RV1503
PIN AMP
RV1509
V ANG
RV1507
V SIZE
RV1505
CORNER COL
RV1501
PIN COL
RV1502
PIN PHASE
IC1501
EAST-WAST CORRECTION
RV1506
V CENT
ABL 1
ABL 2
P OUT
V CENT
+135V
L810
L805
T801
H.D.T
H DRIVE Q805
H OUT Q804
V CENTER Q505,506
CANAL+BLK SW Q507
IC502
V OUT
IC501
DEFLECTION PROCESSOR
FBP
VCR
VIDEO
V BLK
SMPS
MUTING 50/60
SMPS REG
RV501 +B ADJ
CF501
V PARA GEN
SCP
HG
VG
SAFTY V BLK
RV502 H PHASE
CONSTANT CURRENT SOURCE Q502
VIDEO AMP Q598
S TV
5V REG Q01
ST-BY Q03
12V REG Q02
7V
14V
5V
12V
SYNC BUFF Q04
IC04
STATIC RAM
IC03
EURO CCT
IC02
VIDEO PROCESSOR
SYNC
VCS
TCS/SCS
F6
TTD
TTC
IN
OUT
XO1
CTO1
BLK OUT Q07
R OUT Q11
G OUT Q10
B OUT Q09
PIC LEVEL Q05
RV01 PIC LEVEL
IC01
MICRO CONT.
RESET Q06
X03
INT/TO
TI
P/ON
TXD
CLK
V
CHR
SCP
ABL
BLK
CANAL + BLANKING Q312
+BLK
TEXT R
TEXT G
TEXT B
ON SCREEN DISPLAY SW Q311
ON SCREEN DISPLAY SW Q313
FAS PIC MUTE SW Q316
ABL Q382
IC301
VIDEO PROCESSOR
BLK 2
PIC
BRT
COLOR
R S/H
G S/H
B S/H
D303
D302
D301
ST-BY SW Q303
T802
FBT
D801
27V
135V
D802
200V
H2
H1
HV
FV
FVR
ABL AMP Q801
D803
G2
C
RV702 FOCUS
RV701 SCREEN
R DRIVE Q702
R OUT Q703
ACO MEASURING Q704
G DRIVE Q705
G OUT Q706
ACO MEASURING Q707
B DRIVE Q708
B OUT Q709
ACO MEASURING Q710
D702
D703
D704
AUTO CUTOFF
R OUT
G OUT
B OUT
AC
V901
DY ASS'Y
NECK ASS'Y
VM
VM IN
PRE AMP Q751,752
PUSH-PULL OUT Q753,754
VM OUT
B
LED A
LED B
NR
RES
SIRCS
V BLK
INIT
50/60
50/60 SW Q001
D1651
D1652
D1654
IC1651
1R DET
RGB SW Q002
MUTE
HUE
ST BY
SDA
SCL
Y/C SW
BLK I
IC302 D/A CONV.
PIC MUTE Q381
IC303
Y/C SW
DL401
Y AMP Q333
DL332
V AMP Q330
VIDEO BUFF Q332
Y BUFF Q1301
IC1301
SHP
Y IN
Y OUT
VM MUTE
VM OUT
VM MUTE Q1305
ANTI PRIORITY SCART Q305
Y OUT Q1306
HUE BUFF Q306
SECAM Q335
PAL/NTSC Q334
NTSC 3.58 Q331
L336 BELL
IC331
C PROCESSOR
SCCP
HUE SERVICE
SECAM
C IN
4.43
NTSC 3.58
PAL
R-Y
B-Y
D309
D331
D332
D333
X332
X331
CT332
CT331
L331 B-Y
RV331 R-Y
IC332
1H DELAY LINE
PD
Y IN
BLK I
R I
G I
B I

5-2. CIRCUIT BOARDS LOCATION



Note: The components identified by shading and mark ⚠ are critical for safety. Replace only with part number specified.

Note :

- All capacitors are in μF unless otherwise noted. pF : μμF 50WV or less are not indicated except for electrolytics.
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch : 5mm Rating electrical power : 1/4W

- Chip resistor is in 1/10W.
- All resistors are in ohms. kΩ = 1000Ω, MΩ = 1000kΩ
- : nonflammable resistor.
- : fusible resistor.
- △ : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B.unless otherwise noted.
- All voltages are in V.
- Readings are taken with a 10MΩ digital multimeter.
- Readings are taken with a color-bar signal input.
- Voltage variations may be noted due to normal production tolerances.
- : B + line.
- : signal path.

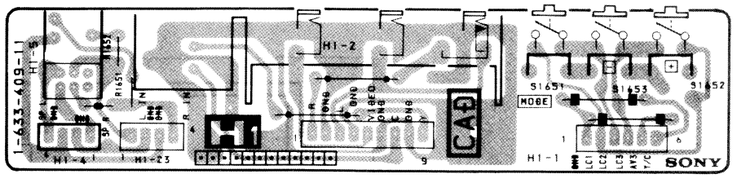
Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: *	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

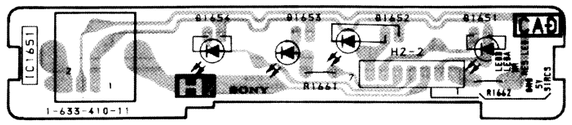
5-3. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

– Conductor Side –

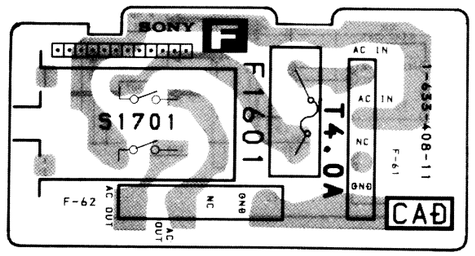
– H1 Board –



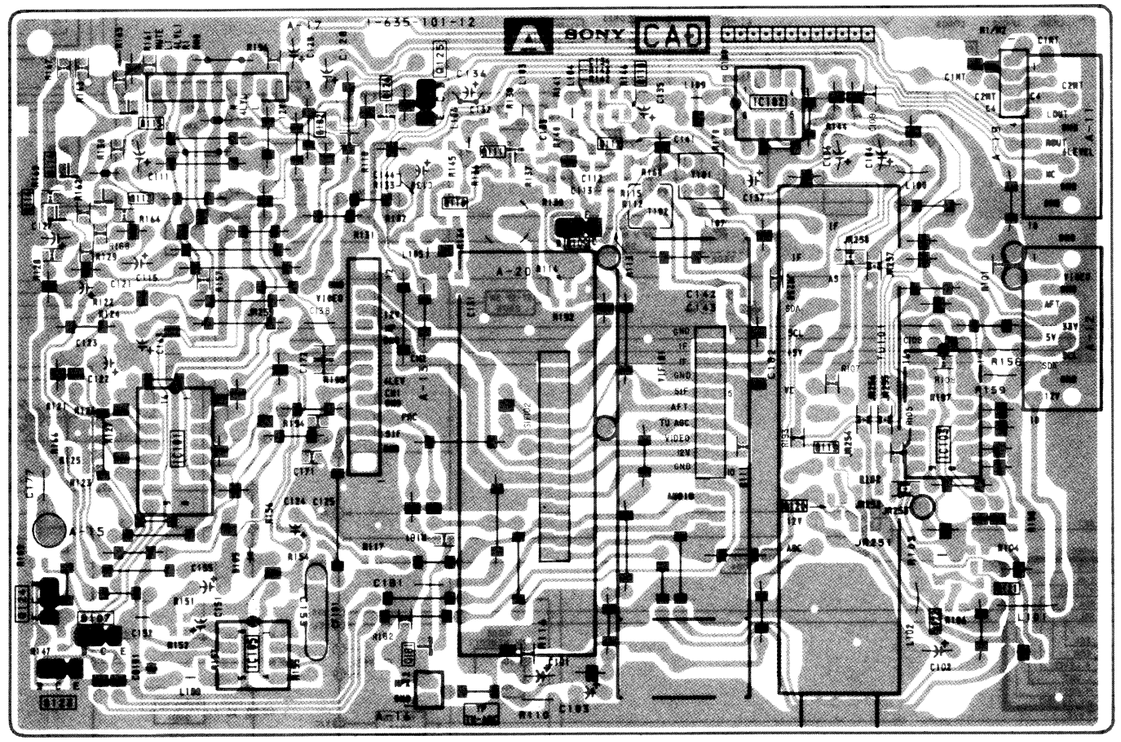
– H2 Board –



– F Board –



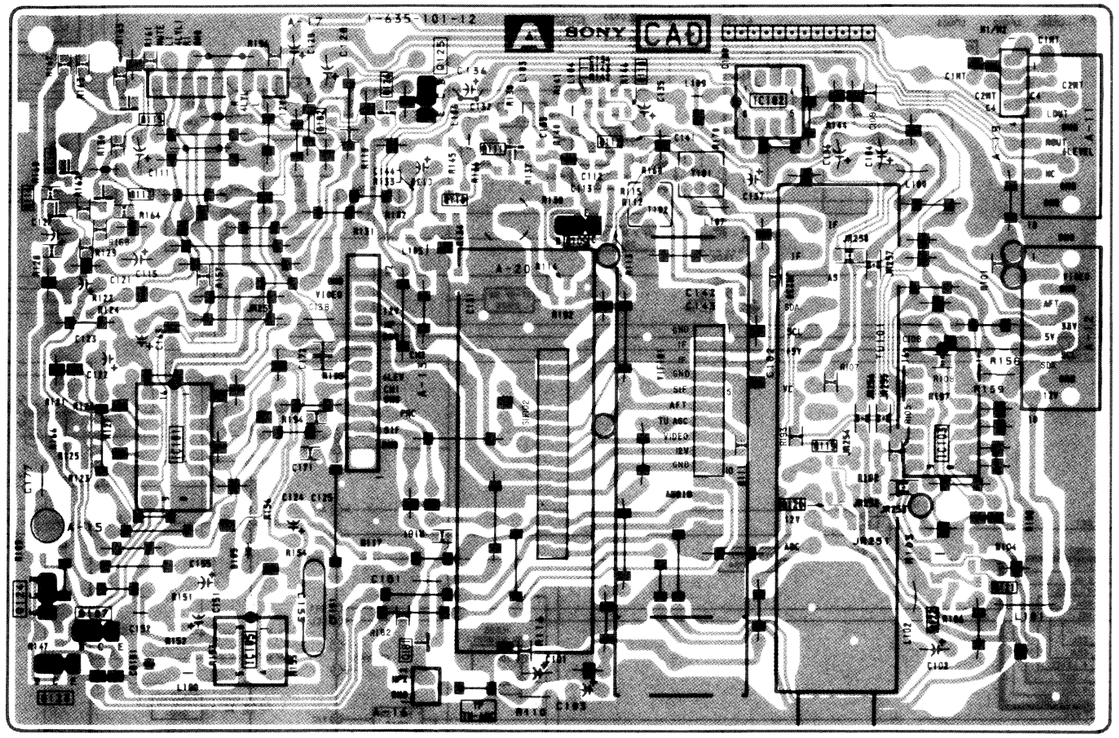
– A Board –



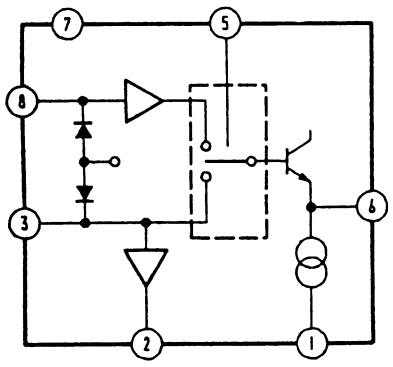
[SPEAKER TERMINAL] **J2** [TUNER, SIF, VIF] **A**

J1 [AUDIO CONTROL, AV INPUT, Y/C INPUT, SCART VIDEO OUT, EAST-WEST CORRECTION]

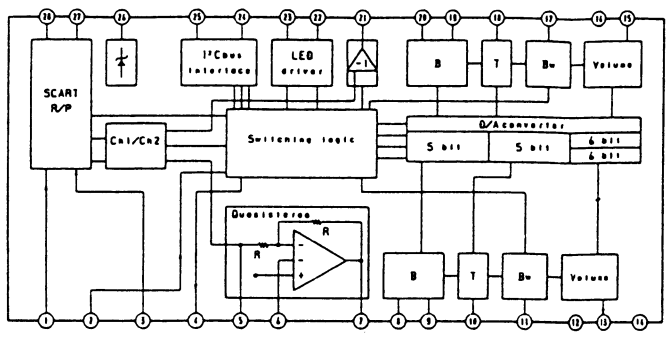
—A Board—



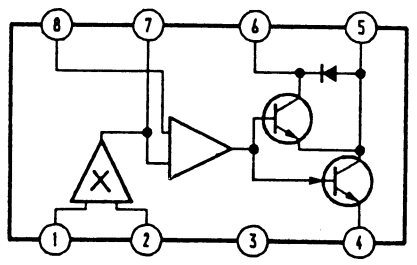
J1 BOARD IC1402 TEA2014A



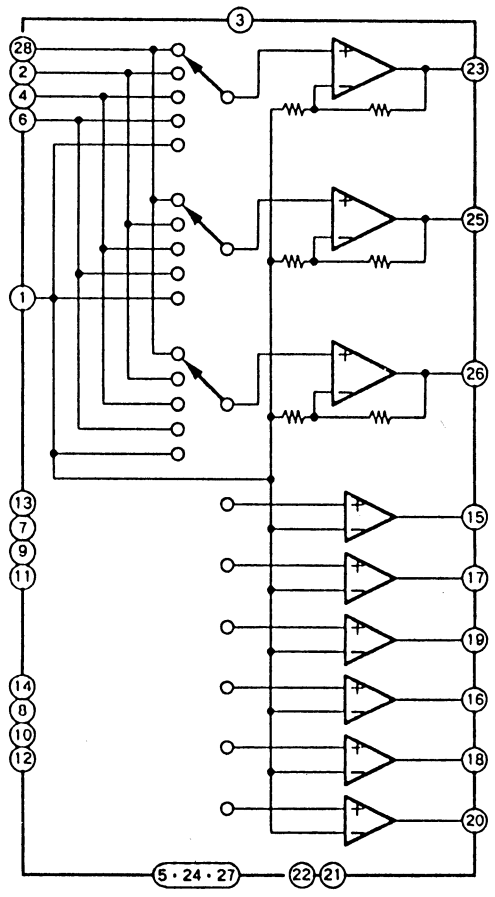
J1 BOARD IC201 TDA6200



J1 BOARD IC1501 TEA2031

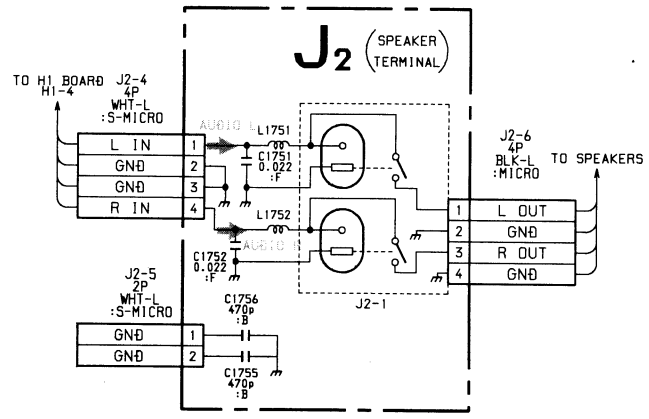


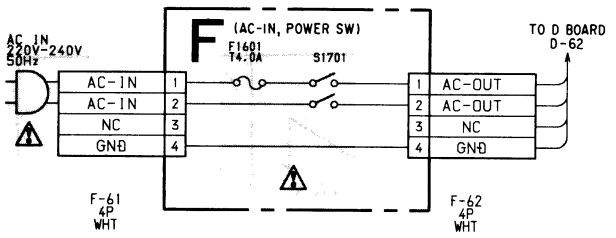
J1 BOARD IC1401 CXA1114P

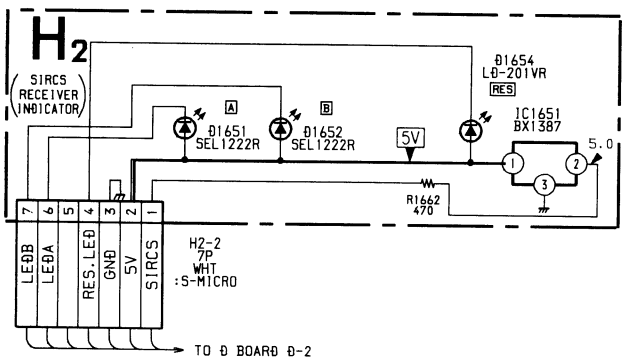


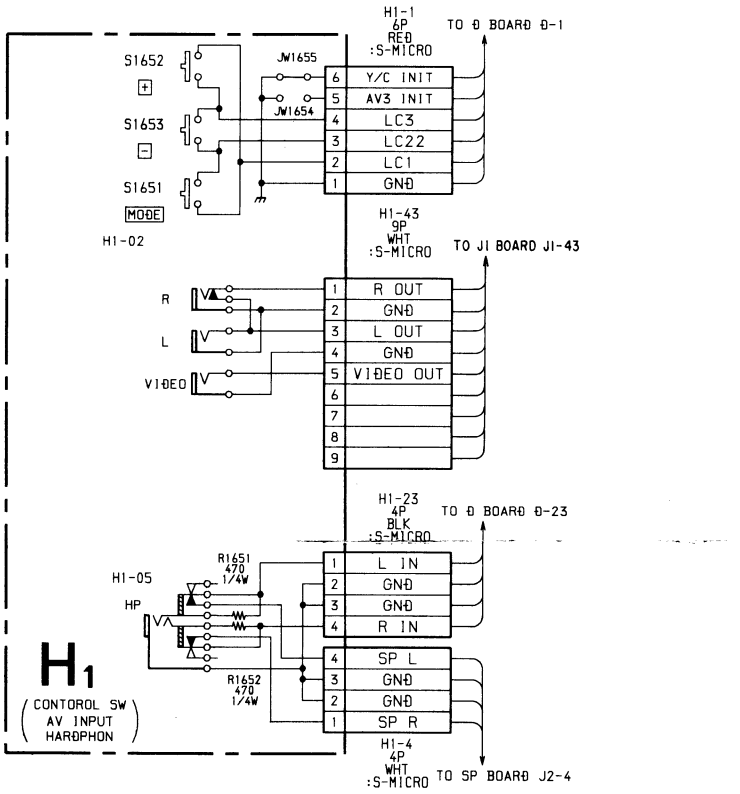
J1

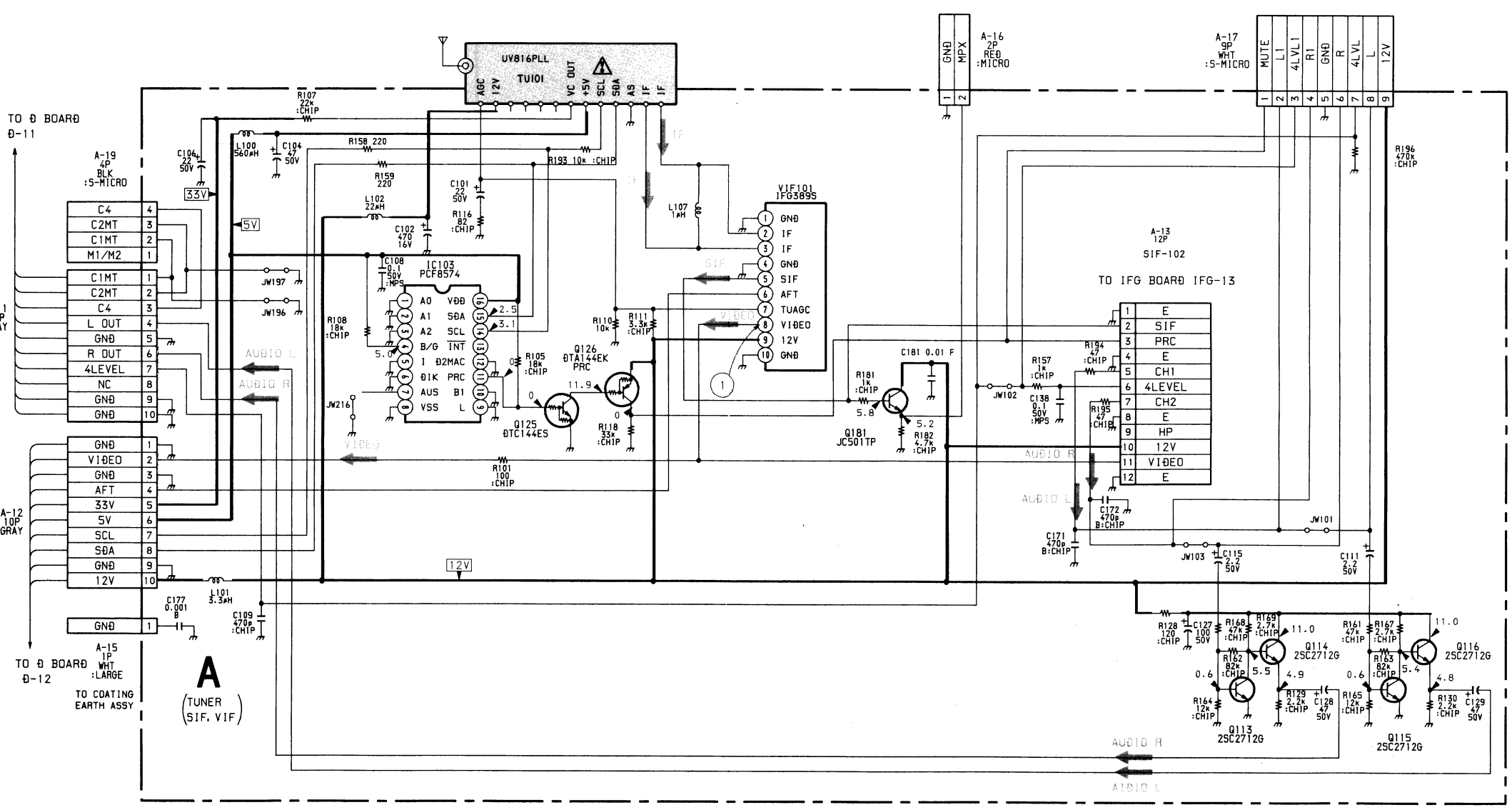
AUDIO CONTROL.
AV INPUT.
Y/C INPUT.
SCART VIDEO OUT.
EAST-WEST CORRECTION











RD

0Vp-p (H)

• WAVEFORMS A BOARD

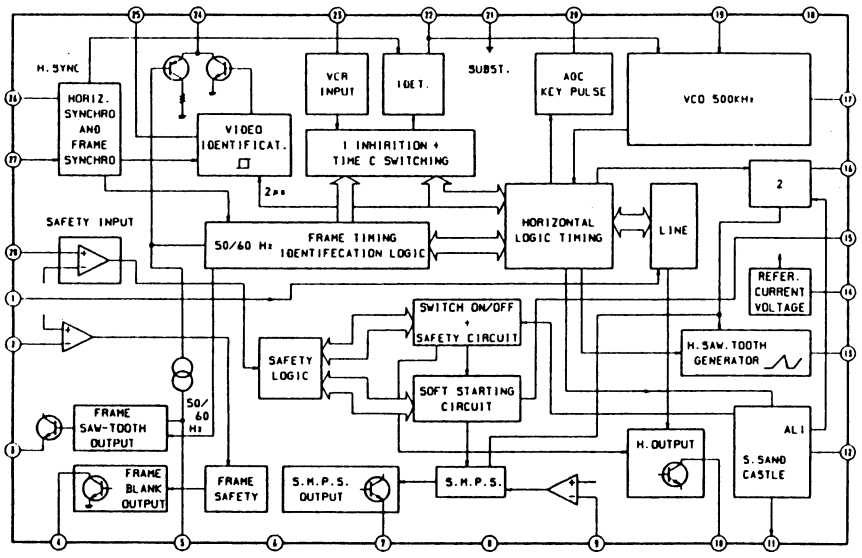
1

1.1Vp-p (H)

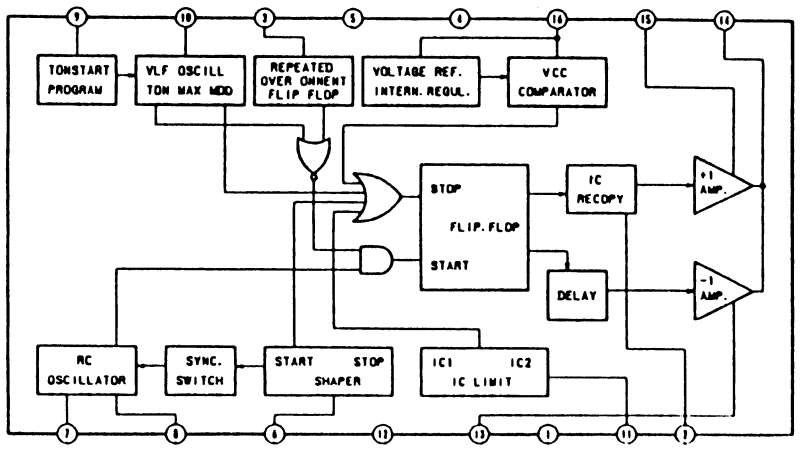
• WAVEFORMS D BOARD

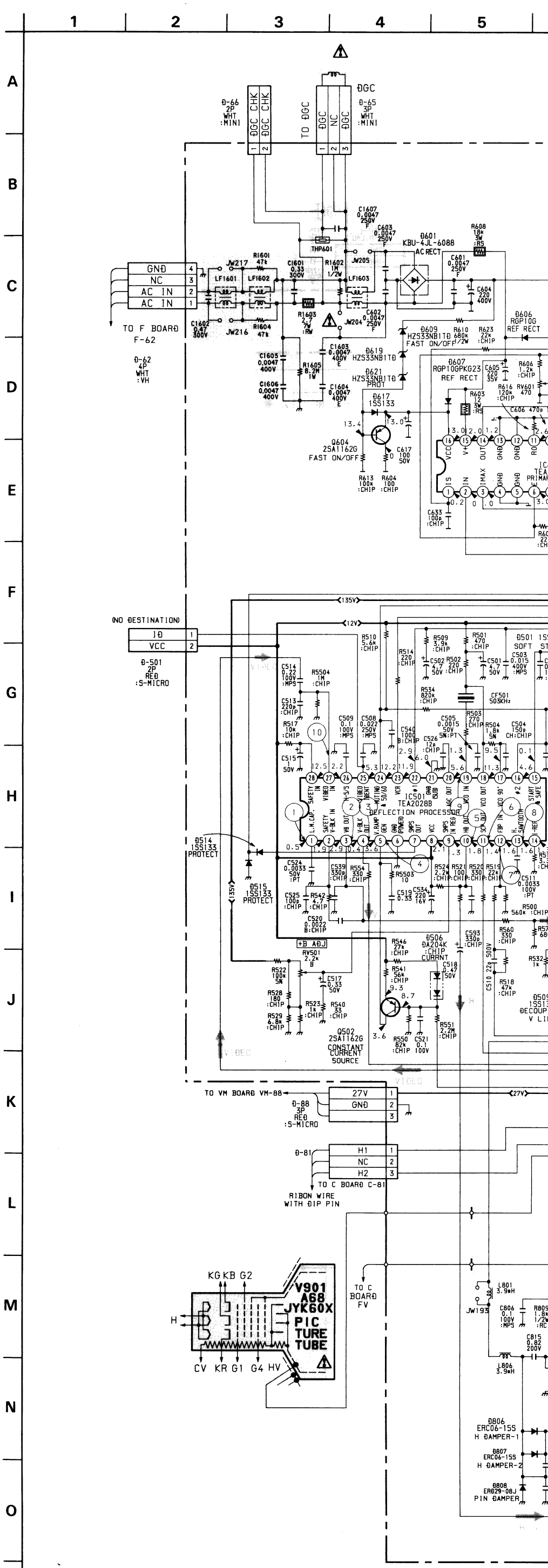
① 13Vp-p (H))	② 2.8Vp-p (V))	③ 4.5Vp-p (V)
④ 2.8Vp-p (V)	⑤ 4Vp-p (H)	⑥ 11Vp-p (H)
⑦ 14Vp-p (H)	⑧ 4Vp-p (H)	⑨ 0.1Vp-p (503kHz)
⑩ 1.3Vp-p (H)	⑪ 0.56Vp-p (V)	⑫ 2.0Vp-p (V)
⑬ 29Vp-p (V)	⑭ 50Vp-p (V)	⑮ 2.8Vp-p (H)
⑯ 230Vp-p (H)	⑰ 11.5Vp-p (H)	⑱ 800Vp-p (H)
⑲ 165Vp-p (H)	⑳ 7Vp-p (V)	㉑ 50Vp-p (V)
㉒ 1.2Vp-p (H)	㉓ 9.0Vp-p (H)	㉔ 3.2Vp-p (12MHz)
㉕ 4.0Vp-p (H)	㉖ 5.6Vp-p (H)	㉗ 4.8Vp-p (V)

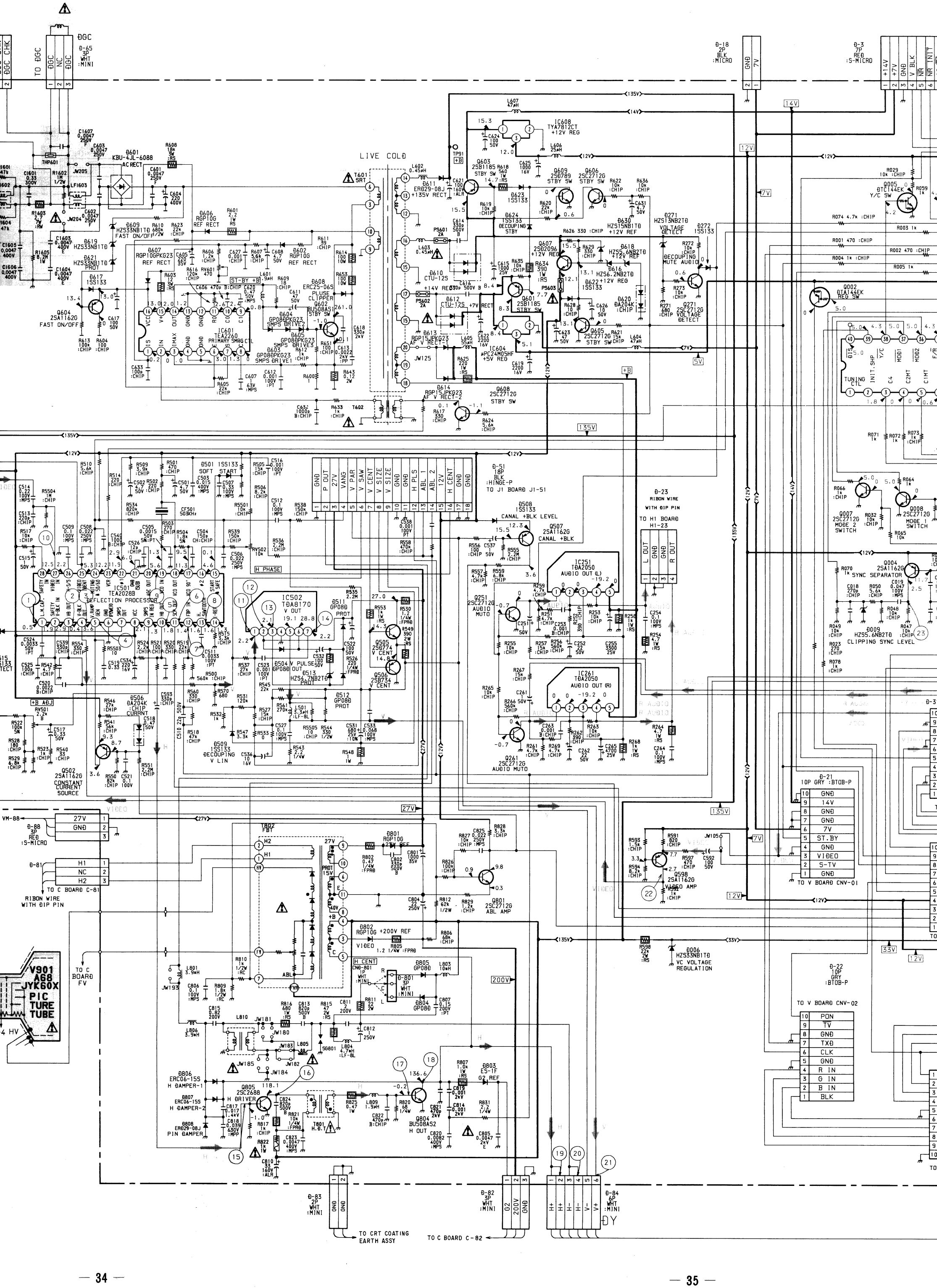
D BOARD IC501 TEA2028B



D BOARD IC601 TEA2260






TO ĐGC
ĐGC
Đ-65 3P WHT :MINI
Đ-18 2P BLK :MICRO
Đ-3 7P RED :S-MICRO
LIVE COLĐ
IC608 TYA7812CT +12V REG
IC601 TEA2260 PRIMARY SMPS CTL
IC501 TEA2028B DEFLECTION PROCESSOR
IC502 TĐA8170 V OUT
IC251 TĐA2050 AUĐIO OUT (L)
IC261 TĐA2050 AUĐIO OUT (R)
IC604 μPC24M05HF +5V REG
Đ501 1SS133 SOFT START
Đ508 1SS133 CANAL +BLK LEVEL
Đ509 1SS133 ĐECOUPING V LIN
Đ-51 18P BLK :HINGE-P
TO J1 BOARĐ J1-51
Đ-23 RIBON WIRE WITH 6IP PIN
TO H1 BOARĐ H1-23
Đ-21 10P GRY :BTOB-P
TO V BOARĐ CNV-01
Đ-22 10P GRY :BTOB-P
TO V BOARĐ CNV-02
Đ-88 3P RED :S-MICRO
TO C BOARĐ C-81
RIBON WIRE WITH 6IP PIN
TO C BOARĐ FV
V901 A68 JYK60X PIC TURE TUBE
Đ-83 2P WHT :MINI
TO CRT COATING EARTH ASSY
Đ-82 3P WHT :MINI
TO C BOARĐ C-82
Đ-84 6P WHT :MINI
ĐY
H PHASE
H CENT
+B AĐJ
135V
14V
12V
7V
5V
27V
200V
33V

TO J1 BOARD J1-44

TO H2 BOARD H2-2

Ð-18 2P BLK :MICRO — GNÐ, 7V

Ð-3 7P RED :S-MICRO — +14V, +7V, GNÐ, V BLK, NR, NR INIT, 60/50

Ð-44 6P WHT :S-MICRO — F/R, Y/C, LED 1, LED 2, GNÐ, 12V

Ð-2 7P WHT :S-MICRO — LEÐB, LEÐA, NR, RES.LEÐ, GNÐ, +5V, SIRCS

(TUNING CONTROL
POWER CONTROL
AUÐIO OUT H/V OUT) **D**

14V, 12V, 7V, 5V, 135V, 33V

Q005 ÐTC144EK Y/C SW — R029 10k :CHIP, R059 1k

Q006 ÐTC144EK FRONT/REAR SW — R030 10k :CHIP, R060 1k

Q009 2SC2712G — R057 220 :CHIP, R056 100 :CHIP, C027 47 50V

R055 330 :CHIP

R062 1k

R074 4.7k :CHIP

R003 1k

R001 470 :CHIP

R002 470 :CHIP

R004 1k :CHIP

R005 1k

TUNING

R010 470 :CHIP

R058 3.9k :CHIP

R008 10k :CHIP

Q002 ÐTA144EK REG SW — R061 1k, R076 10k :CHIP, R007 4.7k :CHIP, R009 10k :CHIP

R013 10k :CHIP

R011 4.7k :CHIP

C004 220 16V

R021 4.7k :CHIP

C007 220p :CHIP

Ð011 HZS6.2NB2TÐ

Ð010 HZS6.2NB2TÐ

R022 4.7k :CHIP

C006 220p :CHIP

R019 1k :CHIP

R020 1k :CHIP

R067 1k :CHIP

Ð002 HZS6.8NB3TÐ 50/60Hz SW

Q001 ÐTC144EK 50/60Hz SW

R075 220 :CHIP

Ð001 1SS133

C032 0.22µF F:CHIP

R068 1k

R069 1k

IC005 SÐA2546 MY MEMORY — +5V, R, SCL, SÐA

R076 :CHIP, R077 :CHIP

IC001 SÐA2083 — TUNING CTL, INIT.SHP, Y/C, MOÐ1, MOÐ2, F/R, RGB, NR INIT, SCL, RES.LEÐ, SÐA, BLK, ST.BY, SYNC, TCL, TÐA, HUE ANG, SIRCS, V-PLS, 60/50, MUTE, AV3 INIT, VCR, V.IÐ, +5V, XTAL1, XTAL2, RESET, C4, C2MT, C1MT, AFT, AFT, NR, RES.LEÐ, GNÐ

C001 12MHz, C031 0.22µF F:CHIP, C002 0.001 B:CHIP, R015 3.3k :CHIP

C024 100p :CHIP, C023 100p :CHIP, C021 100p :CHIP

R071 1k, R072 1k, R073 1k :CHIP, R040 15k :CHIP

C003 10 50V, R051 470 :CHIP, R016 33k :CHIP

R014 8.2k :CHIP, Ð007 1SS133 PLOT RESET, Ð003 1SS133 HUE CTL, R017 39k :CHIP

C011 0.01 F:CHIP, R052 1k :CHIP, R053 1k :CHIP, R054 1k :CHIP

C010 220 16V, Ð004 1SS133, R024 1k :CHIP

C029 0.22µF F:CHIP, C025 100p :CHIP, C012 10 50V, L001 27µH, C009 47p CH:CHIP

C030 0.22µF F:CHIP

R025 100 :CHIP, R026 1k

IC002 CX01050A-09P ON SCREEN DISPLAY — +5V, GRN, RESET, H.PLS, V.PLS, SÐA, SCL

C008 47p CH:CHIP

C020 33 50V

R027 100 :CHIP, R028 100 :CHIP, C022 0.01 F:CHIP

R031 22k :CHIP

Ð005 HZS5.6NB2TÐ

Ð-1 6P RED :S-MICRO — Y/C INIT, AV3 INIT, LC3, LC2, LC1, GNÐ

TO H1 BOARÐ H1-1

R066 1k :CHIP, Q007 2SC2712G MODE 2 SWITCH, R032 10k :CHIP

Q008 2SC2712G MODE 1 SWITCH, R064 1k, R063 10k, R033 10k :CHIP, R065 10k

R035 22k :CHIP, R036 18k :CHIP, C013 0.1 100V :MPS

R018 82k :CHIP, C005 50V

IC003 BA4558 AFT CONPARATORE

R037 4.7k :CHIP, C014 0.1 100V :MPS, R038 2.7k :CHIP

R039 22k :CHIP, R034 15k :CHIP, R041 C015 10k 0.47 :CHIP 50V

Q004 2SA1162G SYNC SEPARATOR — R044 100k :CHIP, R045 3.3k :CHIP, R042 1k :CHIP, R046 33k :CHIP, C017 0.1 100V :MPS

R070 1k, C018 270p :CHIP, R050 5.6k :CHIP, C019 0.047 100V :MPS

Ð009 HZS5.6NB2TÐ CLIPPING SYNC LEVEL — R049 10k :CHIP, R047 10k :CHIP

C016 150p :CHIP, R043 470 :CHIP

Q003 2SA1162G SYNC SEPARATOR

R023 270 :CHIP, R078 1k :CHIP

Ð-31 10P GRY :BTOB-P — V IN, GNÐ, Y OUT, GNÐ, V OUT, YC-SWITCH, C OUT, GNÐ, SÐA, SCL

TO B BOARÐ B-31

Ð-21 10P GRY :BTOB-P — GNÐ, 14V, GNÐ, GNÐ, 7V, ST.BY, GNÐ, VIÐEO, S-TV, GNÐ

TO V BOARÐ CNV-01

HUE, ST.BY, MUTE, CHAR, P/ON, SHP INIT, +12V, SCP, +BLK, ABL

TO B BOARÐ B-32

Ð-45 6P BLK :S-MICRO — GNÐ, R OUT, L OUT, GNÐ, R IN, L IN

TO J1 BOARÐ J1-44

Ð-11 10P GRY :BTOB-P — C1MT, C2MT, C4, L IN, GNÐ, R IN, 4-LEVEL, NC, GNÐ, GNÐ

TO A BOARÐ A-11

Ð-12 10P GRY :BTOB-P — GNÐ, VIÐEO IN, GNÐ, AFT, 33V, 5V, SCL, SÐA, GNÐ, 12V

TO A BOARÐ A-12

Ð-32 10P GRY :BTOB-P — MOÐE 1, MOÐE 2, GNÐ, SÐA, SCL, 4 LEVEL, R, G, B, BLK, GNÐ, C IN, GNÐ, Y IN, GNÐ, V IN, GNÐ, V TV OUT

Ð-41 18P BLK :HINGE-P

TO J1 BOARÐ J1-41

Ð-22 10P GRY :BTOB-P — PON, TV, GNÐ, TXÐ, CLK, GNÐ, R IN, G IN, B IN, BLK

TO V BOARÐ CNV-02

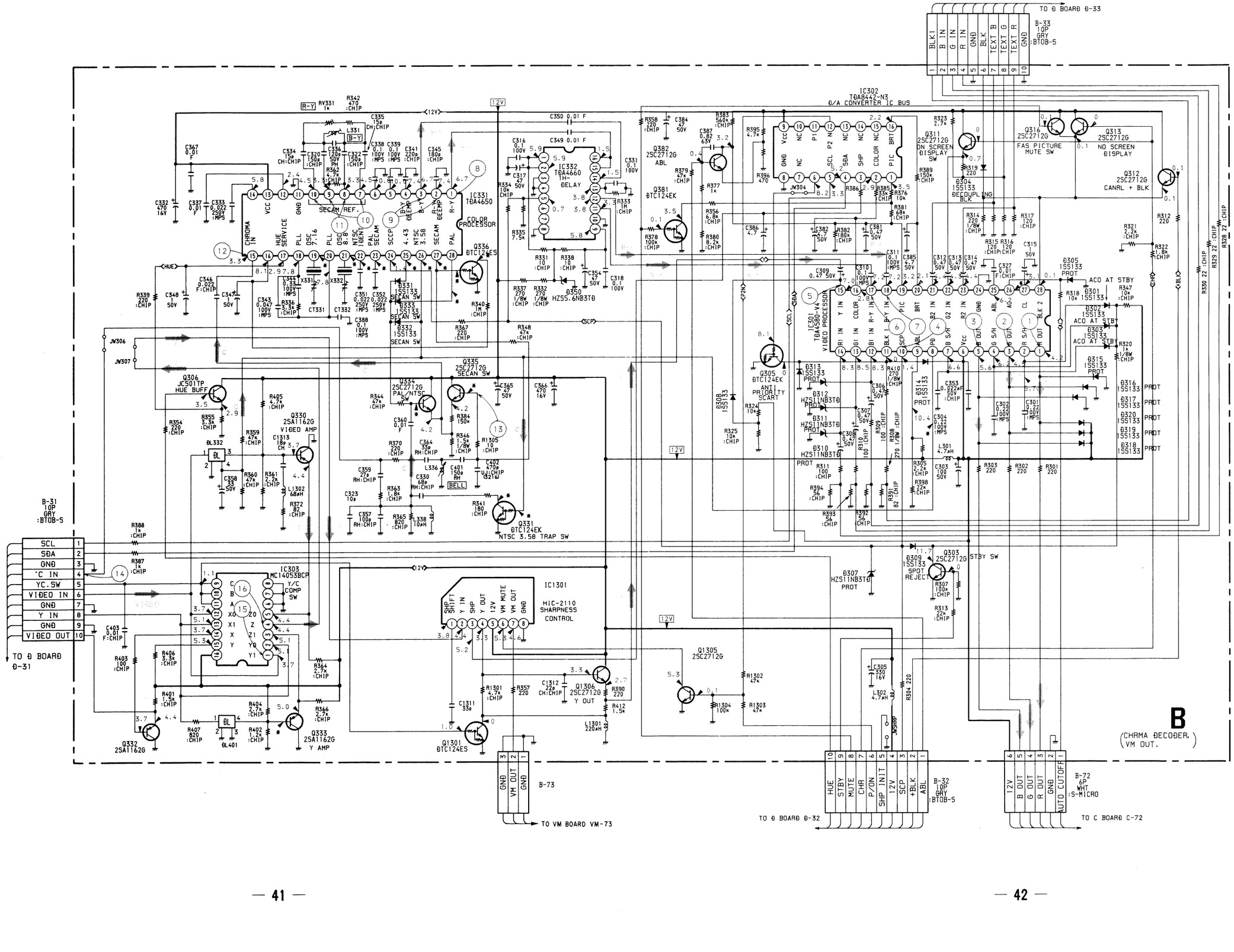
Ð-33 10P GRY :BTOB-P — BLK1, B OUT, G OUT, R OUT, GNÐ, BLK, TEXT B, TEXT G, TEXT R, GNÐ

TO B BOARÐ B-33

Ð006 HZS33NB1TÐ VC VOLTAGE REGULATION

R591 820 :CHIP, JW105, R597 470 :CHIP, C592 100 50V, Q598 2SA1162G VIÐEO AMP, R592 1k :CHIP

DY — H.ÐY, H.ÐY V.ÐY, V.ÐY



• WAVEFORMS B BOARD

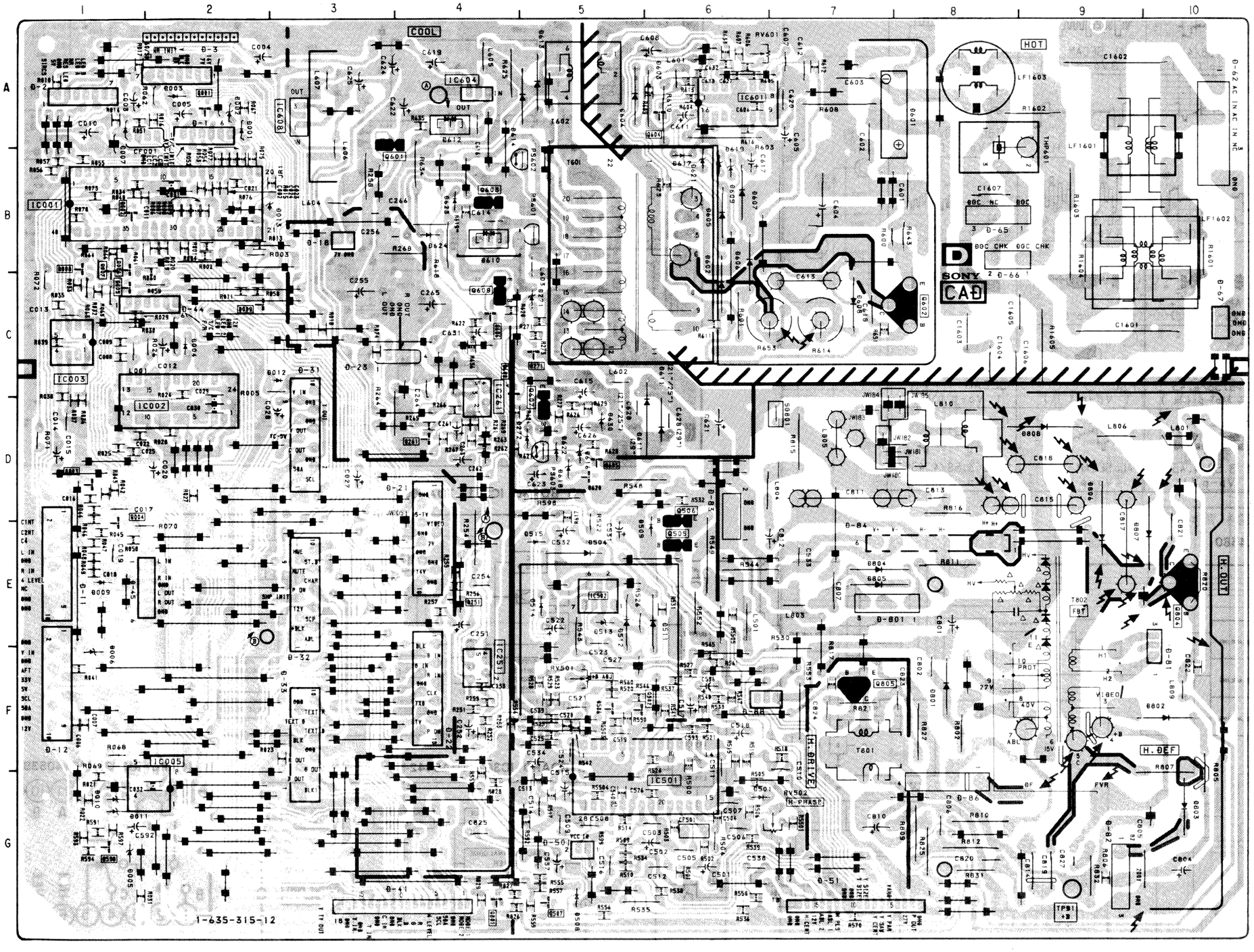
① PAL, SECAM 4.8Vp-p (H)	① NTSC 3.58/4.43 4.8 Vp-p (H)	① PAL 0.4Vp-p (H)	
④ 1 Vp-p (H)	⑤ PAL 0.4Vp-p (H)		
⑦ PAL, SECAM 1.1Vp-p (H)	⑦ NTSC 3.58/4.43 1 Vp-p (H)		
⑨ SECAM 1.3Vp-p (H)	⑨ NTSC 3.58/4.43 0.6 Vp-p (H)		
⑫ NTSC 3.58/4.43 0.05Vp-p (H)	⑬ PAL 0.4Vp-p (H)		
⑭ NTSC 3.58/4.43 1.1Vp-p (H)	⑮ PAL 1 Vp-p (H)		

As to the voltage volue shown by mark ※ on the Schematic Diagram, the another list.

		PAL	SECAM	NTSC3.58	NTSC4.43
IC301	⑧	0.1	0.1	5.8	0.1
	㉔	6.7	6.8	5.1	5.1
IC331	⑲	3.1	3.6	3.1	2.8
	㉑	3.0	3.5	2.9	2.7
	㉒	5.6	5.6	7.1	7.2
	㉓	7.5	7.0	5.6	5.6
	㉕	0.1	0.1	0.1	5.8
	㉖	0.1	0.1	5.8	0.1
	㉗	0.1	5.8	0.1	0.1
	㉘	5.9	0.1	0.1	0.1
Q331 (B)		0.1	0.1	5.8	0.1
(C)		1.5	1.9	0	0.8
Q333 (B)		3.4	4.4	4.4	4.4
Q334 (B)		4.9	0.1	4.8	4.8
Q335 (B)		0.1	4.8	0.1	0.1
Q336 (B)		0.1	5.8	0.1	0.1
(C)		7.3	0	7.3	7.3

[TUNING CONTROL, POWER CONTROL, AUDIO OUT, H/V OUT] **D** **D**

—D Board—



IC	
IC001	B-2
IC002	D-2
IC003	C-1
IC005	G-2
IC251	F-4
IC261	C-4
IC501	G-6
IC502	E-5
IC601	A-6
IC604	A-4
IC608	A-3

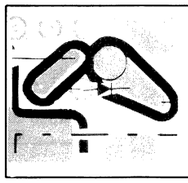
TRANSISTOR	
Q001	A-2
Q002	B-1
Q003	D-1
Q004	D-1
Q005	C-1
Q006	B-1
Q007	C-1
Q008	C-1
Q009	C-2
Q251	E-4
Q261	D-4
Q271	C-5
Q502	F-6
Q505	E-6
Q506	E-6
Q507	G-5
Q598	G-1
Q601	B-4
Q602	C-8
Q603	B-4
Q604	A-6
Q605	D-5
Q606	C-4
Q607	D-5
Q608	C-4
Q609	C-4
Q801	G-4
Q804	E-10
Q805	F-7

DIODE	
D001	A-2
D002	A-2
D003	A-2
D004	C-2
D005	G-1
D006	F-1
D007	A-1
D009	E-1
D010	G-1
D011	G-1
D271	C-5
D272	D-5
D501	G-6
D504	E-5
D506	E-6
D508	G-5
D509	D-6
D511	E-6
D512	E-5
D513	E-5
D514	E-5
D515	E-5
D601	A-8
D602	C-6
D603	A-6
D604	A-5
D605	B-6
D606	B-6
D607	B-6
D608	C-7
D609	B-6
D610	B-4
D611	D-6
D612	A-4
D613	A-5
D614	A-5
D616	D-5
D617	B-6
D618	D-5
D619	B-6
D620	D-5
D621	B-6
D622	D-5
D623	B-4
D624	B-4
D630	D-5
D801	F-8
D802	F-10
D803	G-10
D804	E-7
D805	E-7
D806	E-9
D807	E-10
D808	D-9

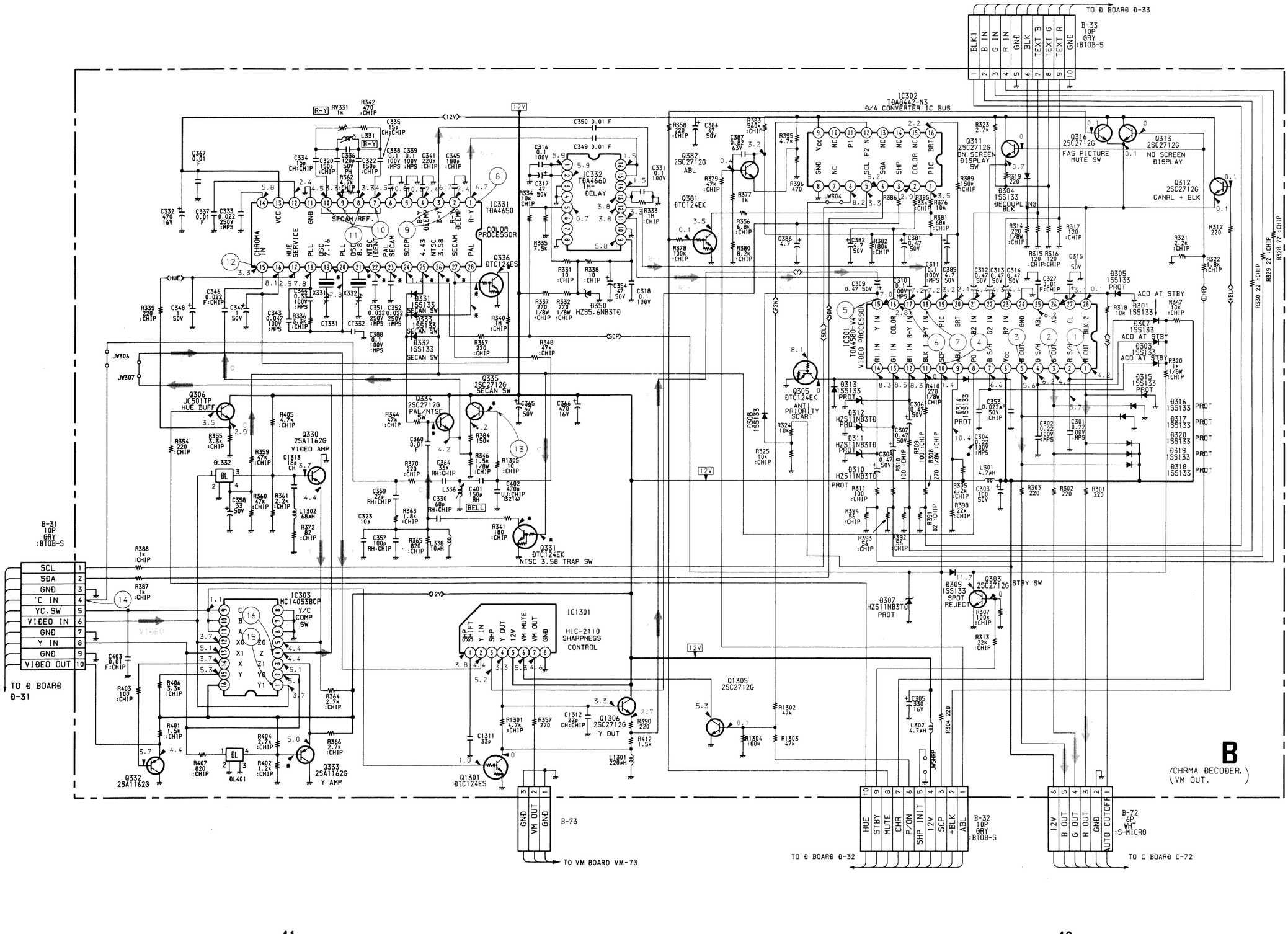
VARIABLE RESISTOR	
RV501	F-5
RV502	G-7
RV601	A-6

07	A–1
09	E–1
10	G–1
11	G–1
71	C–5
72	D–5
01	G–6
04	E–5
06	E–6
08	G–5
09	D–6
11	E–6
12	E–5
13	E–5
14	E–5
15	E–5
01	A–8
02	C–6
03	A–6
04	A–5
05	B–6
06	B–6
07	B–6
08	C–7
09	B–6
10	B–4
11	D–6
12	A–4
13	A–5
14	A–5
16	D–5
17	B–6
18	D–5
19	B–6
20	D–5
21	B–6
22	D–5
23	B–4
24	B–4
30	D–5
01	F–8
02	F–10
03	G–10
04	E–7
05	E–7
06	E–9
07	E–10
08	D–9

VARIABLE RESISTOR	
501	F–5
502	G–7
601	A–6



NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.



• WAVEFORMS B BOARD

① PAL, SECAM 4.8Vp-p (H)	① NTSC 3. 4.8 Vp-
④ 1 Vp-p (H)	⑤ PAL 0.4Vp-
⑦ PAL, SECAM 1.1Vp-p (H)	⑦ NTSC 3. 1 Vp-
⑨ SECAM 1.3Vp-p (H)	⑨ NTSC 3.5 0.6 Vp-
⑫ NTSC 3.58/4.43 0.05Vp-p (H)	⑬ PAL 0.4Vp-
⑭ NTSC 3.58/4.43 1.1Vp-p (H)	⑮ PAL 1 Vp-

As to the voltage volue shown by mark ※ on the Schematic Diagram, the another list.

		PAL	SECAM	NTSC3.58	NTSC4.43
IC301	⑧	0.1	0.1	5.8	0.1
	㉔	6.7	6.8	5.1	5.1
IC331	⑲	3.1	3.6	3.1	2.8
	㉑	3.0	3.5	2.9	2.7
	㉒	5.6	5.6	7.1	7.2
	㉓	7.5	7.0	5.6	5.6
	㉕	0.1	0.1	0.1	5.8
	㉖	0.1	0.1	5.8	0.1
	㉗	0.1	5.8	0.1	0.1
	㉘	5.9	0.1	0.1	0.1
Q331	(B)	0.1	0.1	5.8	0.1
	(C)	1.5	1.9	0	0.8
Q333	(B)	3.4	4.4	4.4	4.4
Q334	(B)	4.9	0.1	4.8	4.8
Q335	(B)	0.1	4.8	0.1	0.1
Q336	(B)	0.1	5.8	0.1	0.1
	(C)	7.3	0	7.3	7.3

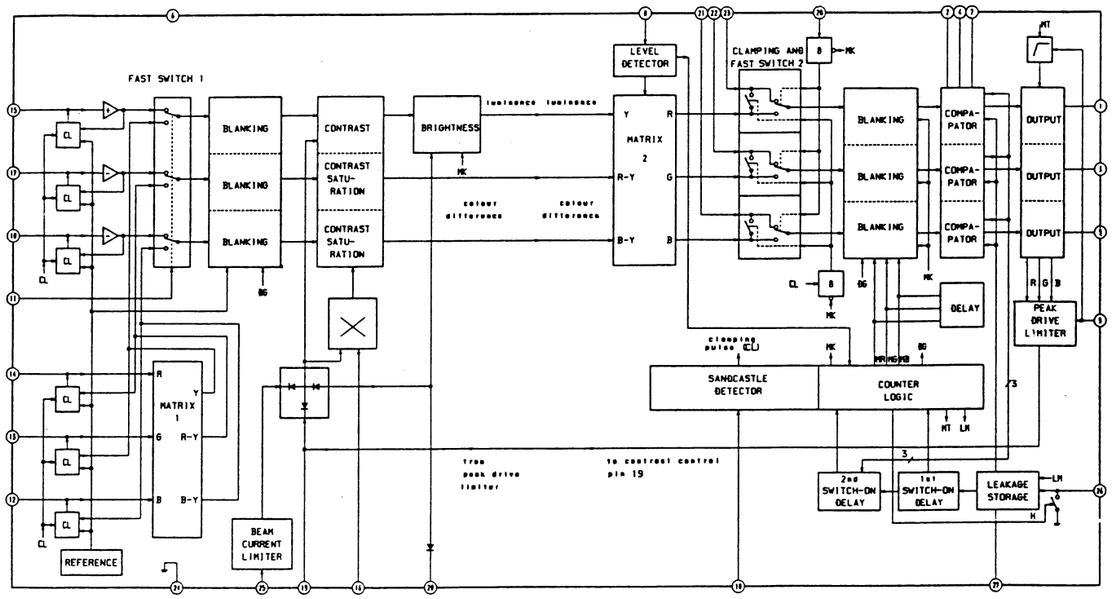
• **WAVEFORMS B BOARD**

① PAL, SECAM 4.8Vp-p (H)	① NTSC 3.58/4.43 4.8 Vp-p (H)	② PAL, SECAM 4.8 Vp-p (H)	② NTSC 3.58/4.43 4.8Vp-p (H)	③ PAL, SECAM 4.8Vp-p (H)	③ NTSC 3.58/4.43 4.8Vp-p (H)
④ 1 Vp-p (H)	⑤ PAL 0.4Vp-p (H)	⑤ SECAM 0.36 Vp-p (H)	⑤ NTSC 3.58/4.43 0.46Vp-p (H)	⑥ PAL, SECAM 0.9Vp-p (H)	⑥ NTSC 3.58/4.43 0.7Vp-p (H)
⑦ PAL, SECAM 1.1Vp-p (H)	⑦ NTSC 3.58/4.43 1 Vp-p (H)	⑧ PAL 0.5Vp-p (H)	⑧ SECAM 1.1 Vp-p (H)	⑧ NTSC 3.58/4.43 0.4Vp-p (H)	⑨ PAL 0.6Vp-p (H)
⑨ SECAM 1.3Vp-p (H)	⑨ NTSC 3.58/4.43 0.6 Vp-p (H)	⑩ SECAM 1.4 Vp-p (H)	⑪ SECAM 0.2Vp-p (H)	⑫ PAL 0.2Vp-p (H)	⑫ SECAM 0.12Vp-p (H)
⑫ NTSC 3.58/4.43 0.05Vp-p (H)	⑬ PAL 0.4Vp-p (H)	⑬ SECAM 0.1 Vp-p (H)	⑬ NTSC 3.58/4.43 0.4 Vp-p (H)	⑭ PAL 1 Vp-p (H)	⑭ SECAM 1 Vp-p (H)
⑭ NTSC 3.58/4.43 1.1Vp-p (H)	⑮ PAL 1 Vp-p (H)	⑮ SECAM 0.9Vp-p (H)	⑮ NTSC 3.58/4.43 1 Vp-p (H)	⑯ PAL, SECAM 0.4Vp-p (H)	⑯ NTSC 3.58/4.43 0.54Vp-p (H)

As to the voltage volue shown by the mark ※ on the Schematic Diagram, see the another list.

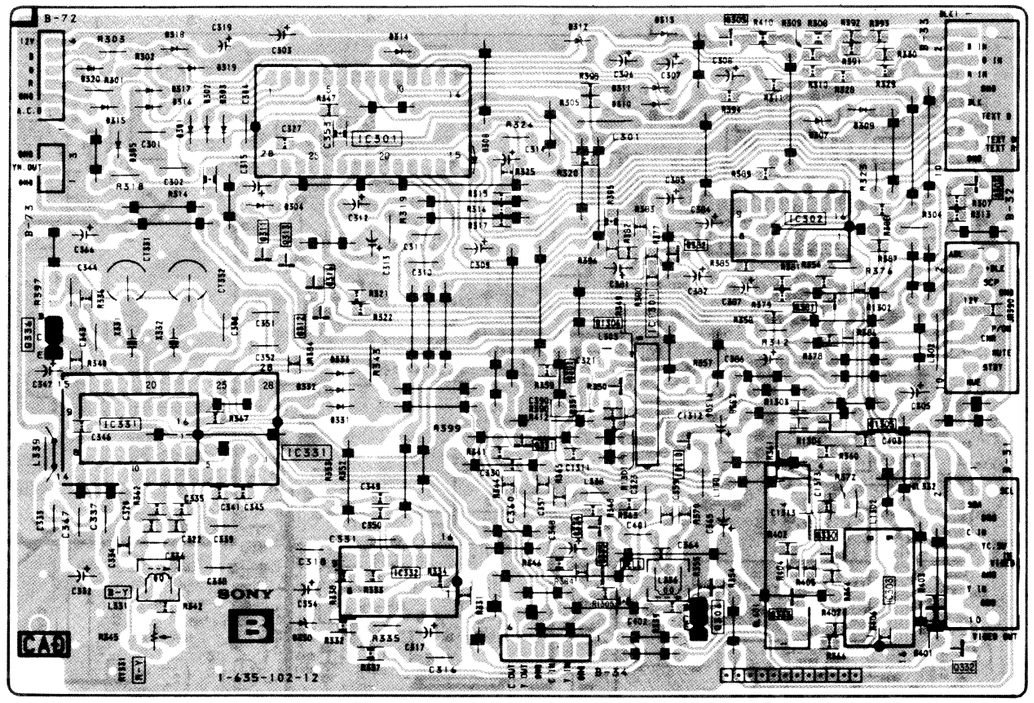
		PAL	SECAM	NTSC3.58	NTSC4.43
IC301	(8)	0.1	0.1	5.8	0.1
	(24)	6.7	6.8	5.1	5.1
IC331	(19)	3.1	3.6	3.1	2.8
	(21)	3.0	3.5	2.9	2.7
	(22)	5.6	5.6	7.1	7.2
	(23)	7.5	7.0	5.6	5.6
	(25)	0.1	0.1	0.1	5.8
	(26)	0.1	0.1	5.8	0.1
	(27)	0.1	5.8	0.1	0.1
	(28)	5.9	0.1	0.1	0.1
Q331	(B)	0.1	0.1	5.8	0.1
	(C)	1.5	1.9	0	0.8
Q333	(B)	3.4	4.4	4.4	4.4
Q334	(B)	4.9	0.1	4.8	4.8
Q335	(B)	0.1	4.8	0.1	0.1
Q336	(B)	0.1	5.8	0.1	0.1
	(C)	7.3	0	7.3	7.3

B BOARD IC301 TDA4580

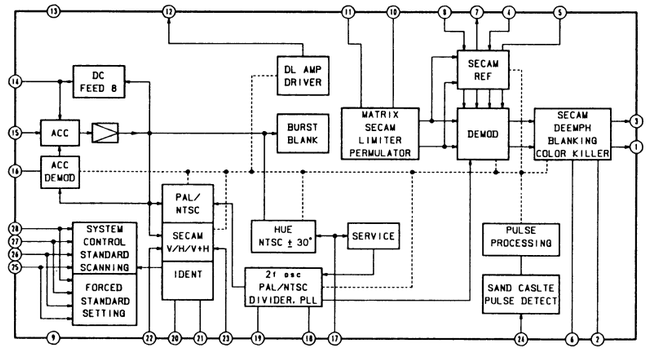


B [CHROMA DECODER VM OUT]

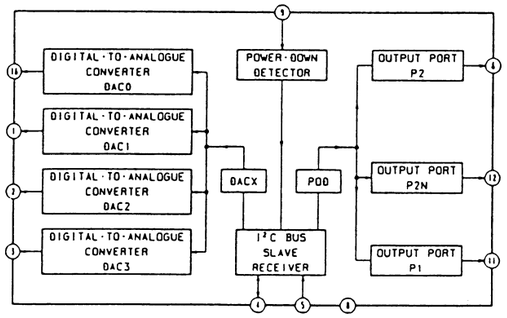
—B Board—



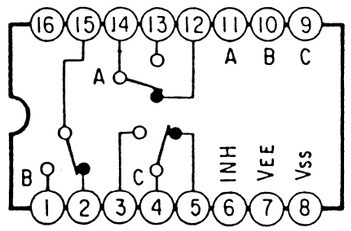
• **B BOARD IC331 TDA4650**

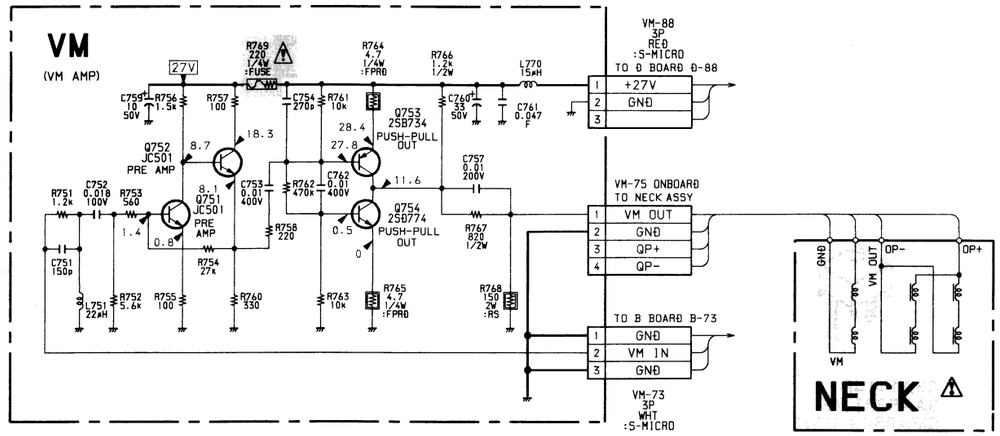


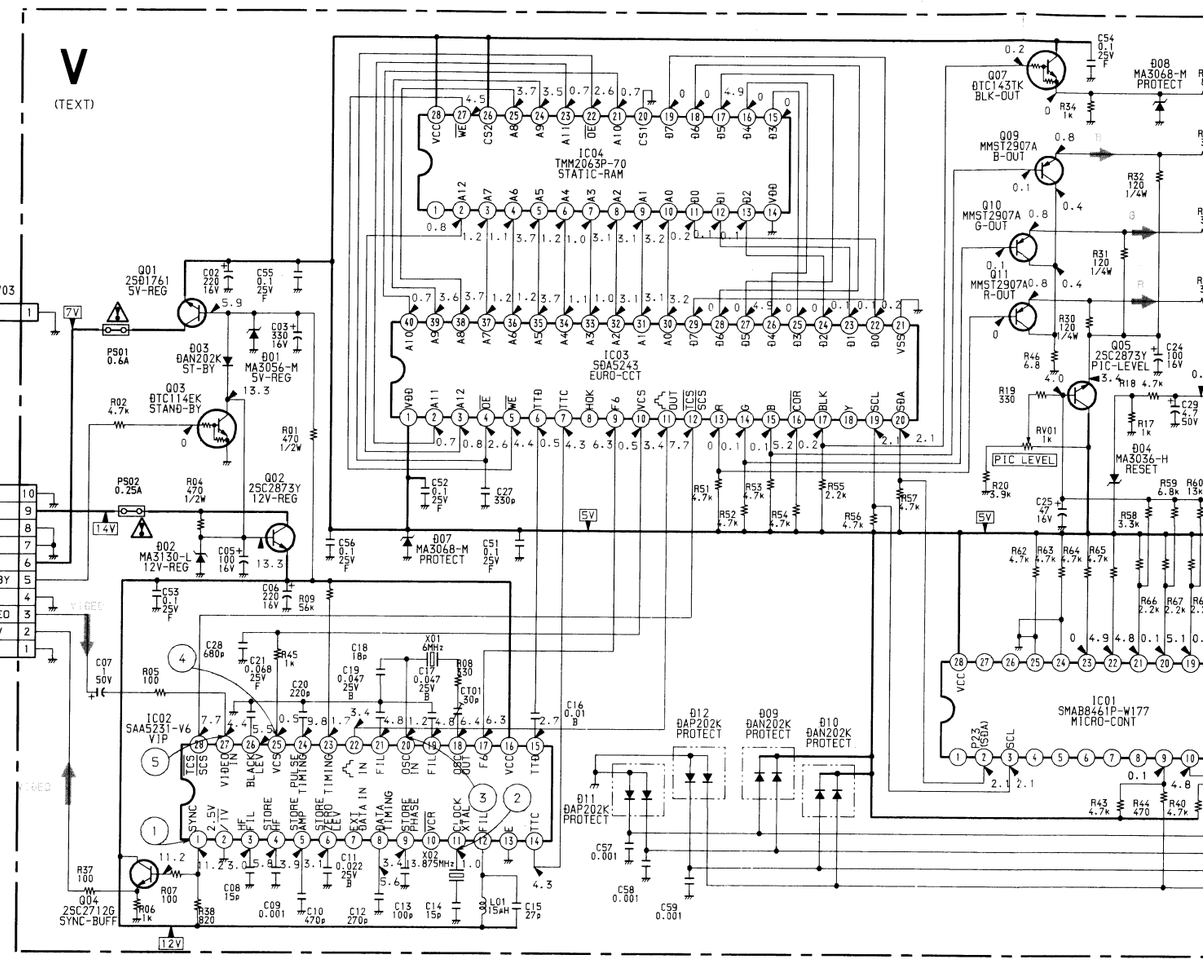
B BOARD IC302 TDA8442-N3



B BOARD IC303 MC14053BCP

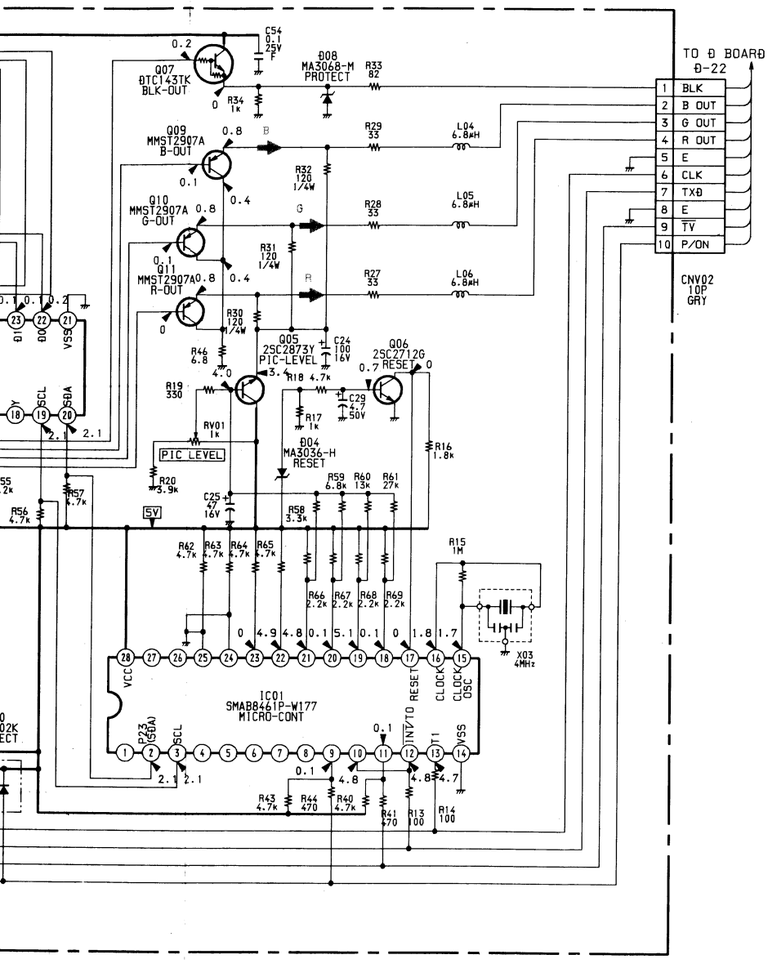


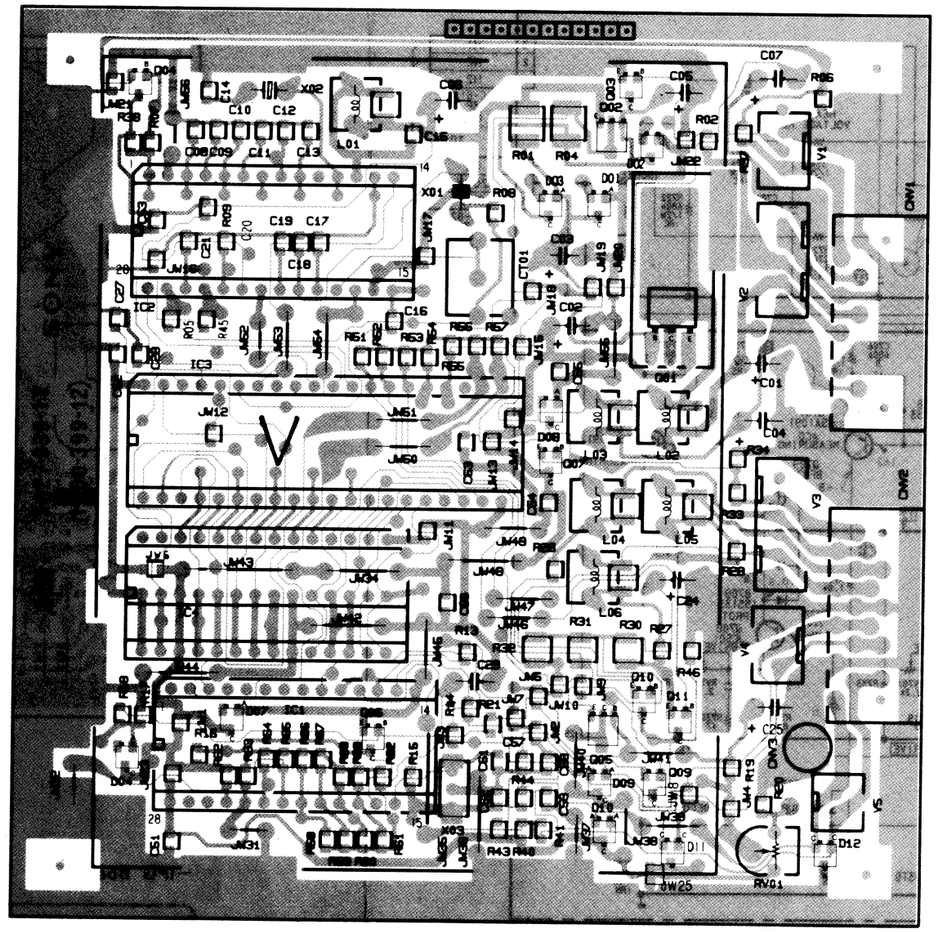


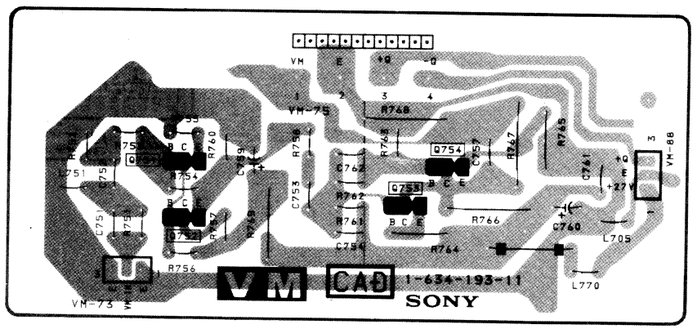


• **WAVEFORMS V BOARD**

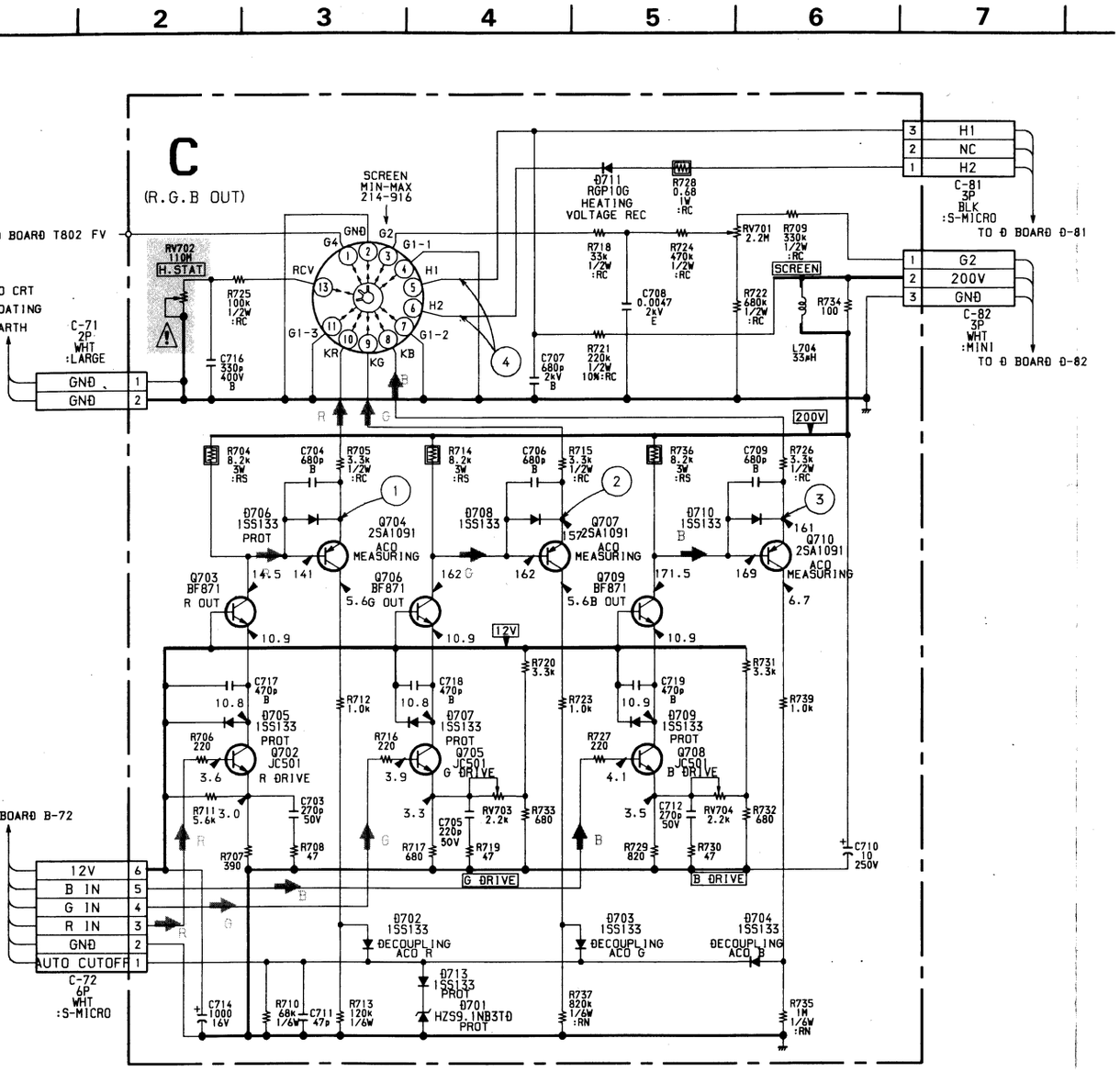
① 0.9Vp-p (H)	② 0.9 Vp-p(13.875MHz)	③ 0.4 Vp-p (6MHz)
④ 2.8Vp-p (H)	⑤ 1 Vp-p (H)	


15
16
17
18
19
TO Ð BOARÐ
Ð-22
1 BLK
2 B OUT
3 G OUT
4 R OUT
5 E
6 CLK
7 TXÐ
8 E
9 TV
10 P/ON
CNV02
10P
GRY
Q07
ØTC143TK
BLK-OUT
Ð08
MA3068-M
PROTECT
Q09
MMST2907A
B-OUT
Q10
MMST2907A
G-OUT
Q11
MMST2907A
R-OUT
Q05
2SC2873Y
PIC-LEVEL
Q06
2SC2712G
RESET
Ð04
MA3036-H
RESET
PIC LEVEL
5V
IC01
SMAB8461P-W177
MICRO-CONT
X03
4MHz
VCC
VSS
SCL
SDA
CLOCK OSC
INVTO RESET


—V Board—
V


—VM Board—
VM
VM-75
VM-73
VM-88
CAD
1-434-193-11
SONY

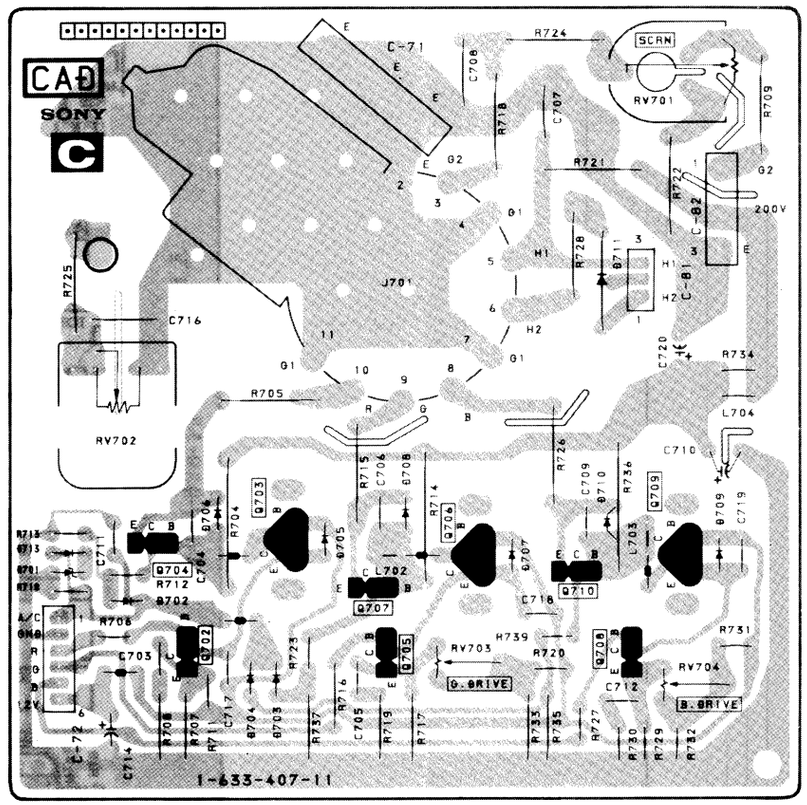
C [R・G・B OUT] IFG [SIF]



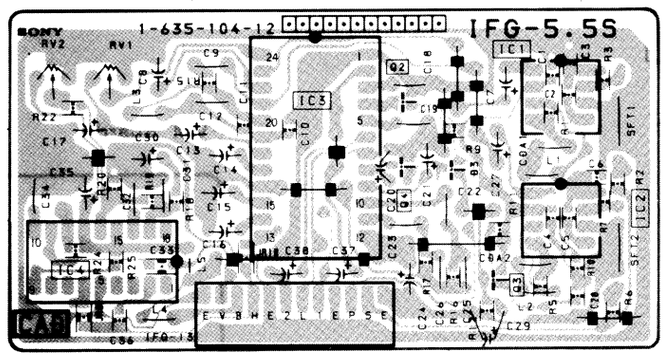
• WAVEFORMS C BOARD

① 100Vp-p (H)	② 105Vp-p (H)
③ 115Vp-p (H)	④ 21Vp-p (H)

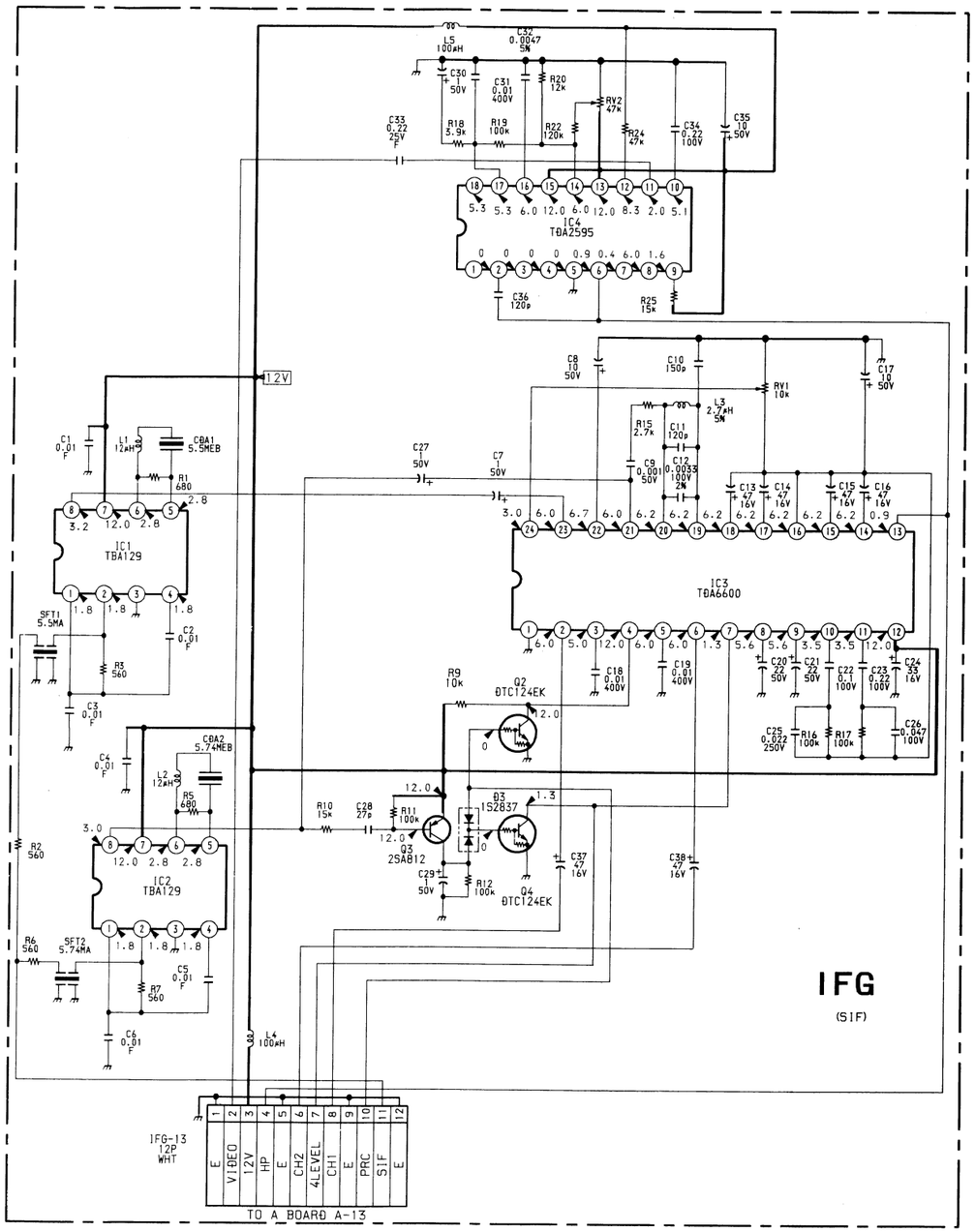
—C Board—



—IFG Board—

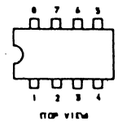


5-4. SCHEMATIC DIAGRAM (SIF-102 IFG-5.5G)

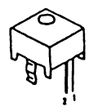


5-5. SEMICONDUCTORS

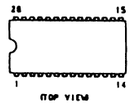
BA4558
SDA2546
TEA2014
TEA2031A



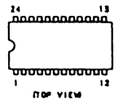
BX1387



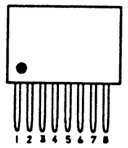
CXA1114P
SAA5231-V6
SMAB8461P-W177
TDA4580
TDA4650
TDA6200
TEA2028B
TMM2063P-70



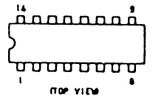
CXD1050A



HIC2110

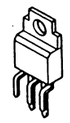


MC14053BCP
PCF8574
TDA4660
TDA8442-N3
TEA2260

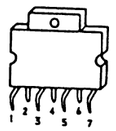


SDA2083
SDA5243

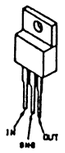
TDA2050



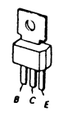
TDA8170



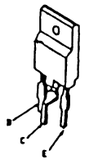
TYA7812CT
μPC24M05HF



BF871

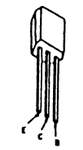


BU508AS1
BU508AS2
2SD1584-LB
2SD1941

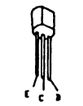


DTA144EK
DTC114EK
DTC124EK
DTC143TK
DTC144EK
MMST2907A
2SA1162G
2SC2712

DTC124ES
DTC144ES

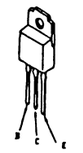


JA101
JC501
2SA1091
2SD789



2SB734
2SD774

2SB1185
2SD1761

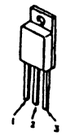


2SC2688

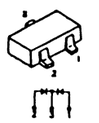
2SC2873Y

2SD2096

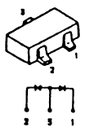
CTU-12S



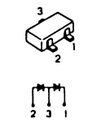
DAN202K



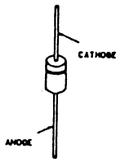
DAP202K



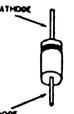
DA204K



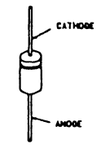
ERC06-15S
ERC25-06S



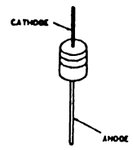
ERD29-08J



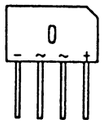
ES1F
GP08D
RGP10G
RGP15J



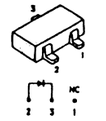
HZS10NB3TD
HZS11NB3TD
HZS13NB2TD
HZS15NB1TD
HZS33NB1TD
HZS36NB4TD
HZS4.7NB2TD
HZS5.6NB2TD
HZS5.6NB3TD
HZS6.2NB2TD
HZS6.8NB3TD
HZS7.5NB3TD
HZS9.1NB3TD
1SS133



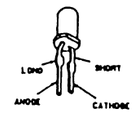
KBU4JL-6088



MA3036H
MA3056M
MA3068M
MA3130L



LD-201VR



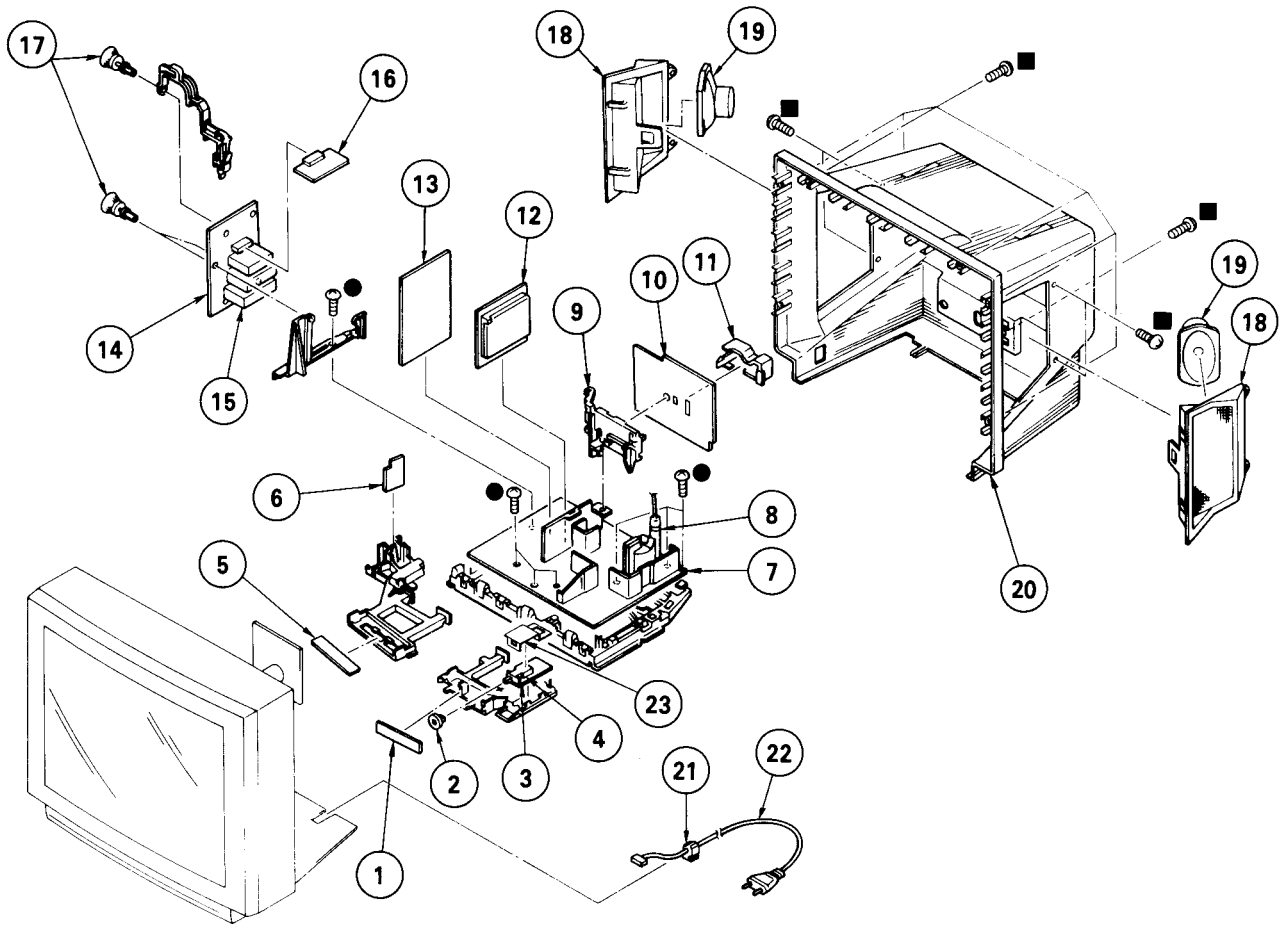
SECTION 6
EXPLODED VIEWS

NOTE:
- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " ★ " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

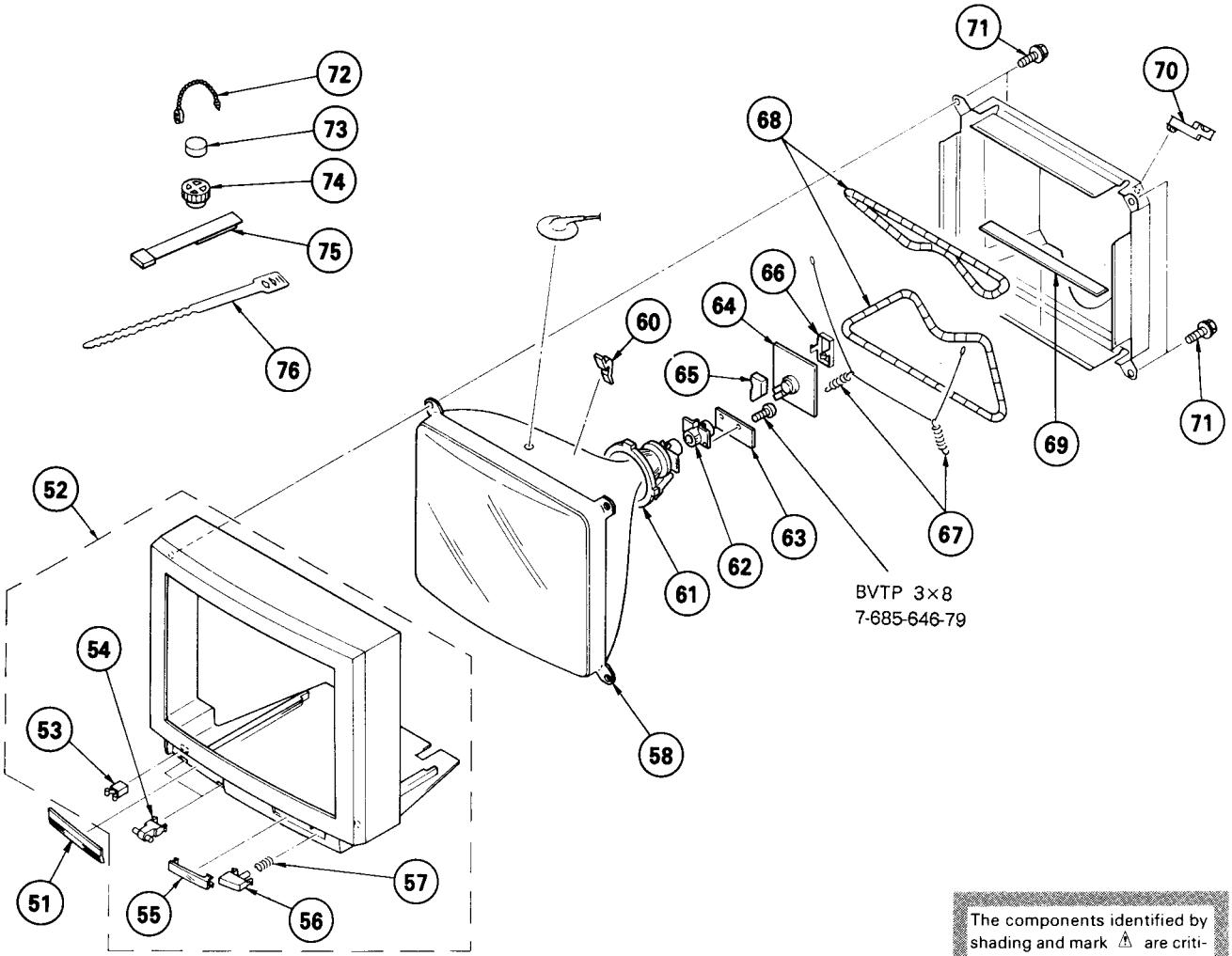
(1) CHASSIS

● : BVTP 3×12 7-685-648-79
■ : BVTP 4×16 7-685-663-79



REF.NO.	PART NO.	DESCRIPTION	REMARK
1	*1-633-410-11	H2 BOARD	
2	4-386-611-01	COVER, SWITCH	
3	*1-633-408-11	F BOARD	
4	⚠1-571-433-11	SWITCH, PUSH (AC POWER)	
5	*1-633-409-11	H1 BOARD	
6	*1-633-411-11	J2 BOARD	
7	*A-1642-008-A	D BOARD, COMPLETE	
8	⚠1-439-416-11	TRANSFORMER ASSY, FLYBACK (UX-1600)	
9	*4-386-624-11	BRACKET, J	
10	*A-1651-015-A	J1 BOARD, COMPLETE	
11	4-200-014-01	BRACKET, TERMINAL	
12	*A-1347-031-A	V BOARD, COMPLETE	
13	*A-1621-011-A	B BOARD, COMPLETE	
14	*A-1632-005-A	A BOARD, COMPLETE	
15	⚠1-465-301-11	TUNER, ET (UV-816(PLL))	
16	*A-1654-003-A	IFG BOARD, COMPLETE	
17	4-386-618-01	RIVET, T TYPE	
18	X-4398-901-1	BOARD ASSY, BAFFLE	
19		SPEAKER	
20	4-398-910-01	COVER, REAR	
21	⚠4-389-201-02	HOLDER, AC CORD	
22	⚠1-575-487-11	CORD,POWER (WITH NOISE FILTER)	
23	4-200-274-01	COVER, POWER SWITCH	

(2) PICTURE TUBE



The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
51	4-398-911-01	DOOR, CONTROL	
52	X-4398-902-1	CABINET ASSY (WITH BEZEL ASSY)	53-57
53	4-392-036-01	CATCHER, PUSH	
54	3-703-035-11	SHAFT, LID	
55	4-200-148-01	WINDOW, ORNAMENTAL	
56	4-200-150-01	BUTTON, POWER	
57	4-329-112-21	SPRING	
58	⚠.8-733-823-05	PICTURE TUBE (A68JYK60X)	
60	3-704-495-01	SPACER, DY	
61	⚠.1-451-313-21	DEFLECTION YOKE (Y29FXA)	
62	⚠.1-452-509-42	NECK ASSY, PICTURE TUBE (NA-308)	
63	*1-634-193-11	VM BOARD	
64	*A-1638-007-A	C BOARD, COMPLETE	
65	*4-379-167-01	COVER (MAIN), CV	
66	*4-379-160-01	COVER (REAR LID), CV	
67	4-369-318-00	SPRING, TENSION	
68	⚠.1-426-398-11	COIL, DEMAGNETIZATION	
69	4-389-291-01	CUSHION	
70	*4-387-216-01	HOLDER, LEAD	
71	4-373-263-01	SCREW (M), PT	
72	4-308-870-00	CLIP, LEAD WIRE	
73	1-452-032-00	MAGNET, DISK; 10MM ϕ	
74	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ϕ	
75	X-4387-214-1	PERMALLOY ASSY, CORRECTION	
76	3-701-007-00	BAND, BINDING	

SECTION 7
ELECTRICAL PARTS LIST

V

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

When indicating parts by reference number, please include the board name.

CAPACITORS
- MF : μF, PF : μμF

COILS
- MMH : mH, UH : μH

RESISTORS
- All resistors are in ohms
- F : nonflammable

REF.NO.	PART NO.	DESCRIPTION				REMARK
	*A-1347-031-A	V BOARD, COMPLETE				
		**********				
	*4-380-699-01	CASE (UPPER LID), SHIELD, A1				
		<CAPACITOR>				
C02	1-124-120-11	ELECT	220MF	20%	16V	
C03	1-124-119-00	ELECT	330MF	20%	16V	
C05	1-126-101-11	ELECT	100MF	20%	16V	
C06	1-124-120-11	ELECT	220MF	20%	16V	
C07	1-124-791-11	ELECT	1MF	20%	50V	
C08	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C09	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C10	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C11	1-163-037-11	CERAMIC CHIP	0.022MF	10%	25V	
C12	1-163-127-00	CERAMIC CHIP	270PF	5%	50V	
C13	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C14	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C15	1-163-103-00	CERAMIC CHIP	27PF	5%	50V	
C16	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C17	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C18	1-163-099-00	CERAMIC CHIP	18PF	5%	50V	
C19	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C20	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C21	1-163-833-00	CERAMIC CHIP	0.068MF		25V	
C24	1-126-101-11	ELECT	100MF	20%	16V	
C25	1-124-477-11	ELECT	47MF	20%	16V	
C27	1-163-129-00	CERAMIC CHIP	330PF	5%	50V	
C28	1-163-137-00	CERAMIC CHIP	680PF	5%	50V	
C29	1-124-927-11	ELECT	4.7MF	20%	50V	
C51	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C52	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C53	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C54	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C55	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C56	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C57	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C58	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C59	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
		<CONNECTOR>				
CNV01	*1-565-393-11	CONNECTOR, BOARD TO BOARD				
CNV02	*1-565-393-11	CONNECTOR, BOARD TO BOARD				
CNV03	*1-508-784-00	PIN, CONNECTOR (5MM PITCH) 1P				
		<TRIMMER>				
CT01	1-141-392-11	CAP, VAR, TRIMMER (1 GANG)				

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<DIODE>				
D01	8-719-105-91	DIODE RD5.6M-B2				
D02	8-719-106-79	DIODE RD13M-B1				
D03	8-719-400-18	DIODE MA152WK				
D04	8-719-105-52	DIODE RD3.6M-B2				
D07	8-719-106-17	DIODE RD6.8M-B2				
D08	8-719-106-17	DIODE RD6.8M-B2				
D09	8-719-400-18	DIODE MA152WK				
D10	8-719-400-18	DIODE MA152WK				
D11	8-719-914-44	DIODE DAP202K				
D12	8-719-914-44	DIODE DAP202K				
		<IC>				
IC1	8-759-986-92	IC MAB-8461P-W177				
IC2	8-759-972-96	IC SAA5231-V6				
IC3	8-759-032-98	IC SDA5243				
IC4	8-759-230-68	IC TMM2063P-70				
		<COIL>				
L01	1-408-411-00	INDUCTOR	15UH			
L04	1-408-407-00	INDUCTOR	6.8UH			
L05	1-408-407-00	INDUCTOR	6.8UH			
L06	1-408-407-00	INDUCTOR	6.8UH			
		<IC LINK>				
PS01 ⚠	1-532-679-91	LINK, IC (ICP-N15) 0.6A				
PS02 ⚠	1-532-727-91	LINK, IC 0.25A				
		<TRANSISTOR>				
Q3	8-729-900-53	TRANSISTOR DTC114EK				
Q01	8-729-107-26	TRANSISTOR 2SD1585-K				
Q02	8-729-807-50	TRANSISTOR 2SD1623-R				
Q04	8-729-271-22	TRANSISTOR 2SC2712-G				
Q05	8-729-807-50	TRANSISTOR 2SD1623-R				
Q06	8-729-271-22	TRANSISTOR 2SC2712-G				
Q07	8-729-900-98	TRANSISTOR DTC143TK				
Q09	8-729-807-87	TRANSISTOR 2SB1295-UL6				
Q10	8-729-807-87	TRANSISTOR 2SB1295-UL6				
Q11	8-729-807-87	TRANSISTOR 2SB1295-UL6				
		<RESISTOR>				
JW1	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW2	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW3	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW4	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW5	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW6	1-216-295-00	METAL GLAZE	0	5%	1/10W	

V B

REF.NO.	PART NO.	DESCRIPTION				REMARK
JW7	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW8	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW9	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW10	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW11	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW12	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW13	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW14	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW15	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW16	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW17	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW18	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW19	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW20	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW21	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW22	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW23	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW24	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JW25	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R01	1-218-326-11	METAL GLAZE	470	5%	1/2W	
R02	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R04	1-218-326-11	METAL GLAZE	470	5%	1/2W	
R05	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R06	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R07	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R08	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R09	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R13	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R14	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R15	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R16	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R17	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R18	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R19	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R20	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R27	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R28	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R29	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R30	1-218-325-11	METAL GLAZE	120	5%	1/4W	
R31	1-218-325-11	METAL GLAZE	120	5%	1/4W	
R32	1-218-325-11	METAL GLAZE	120	5%	1/4W	
R33	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R34	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R37	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R38	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R40	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R41	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R43	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R44	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R45	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R46	1-216-311-00	METAL GLAZE	6.8	5%	1/10W	
R51	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R52	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R53	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R54	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R55	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R56	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R57	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R58	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R59	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R60	1-216-076-00	METAL GLAZE	13K	5%	1/10W	
R61	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R62	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R63	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R64	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R65	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R66	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R67	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R68	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R69	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
		<VARIABLE RESISTOR>				
RV01	1-238-012-11	RES, ADJ, CARBON 1K				
		<CRYSTAL>				
X01	1-567-162-00	OSCILLATOR, CRYSTAL				
X02	1-567-495-11	OSCILLATOR, CRYSTAL				
X03	1-577-082-11	VIBRATOR, CERAMIC				
		**********				
	*A-1621-011-A	B BOARD, COMPLETE				
		**********				
	*1-565-393-11	CONNECTOR, BOARD TO BOARD				
	*1-568-878-51	PIN, CONNECTOR 3P				
	*1-568-881-51	PIN, CONNECTOR 6P				
		<CAPACITOR>				
C301	1-106-228-00	MYLAR	0.22MF	10%	100V	
C302	1-106-228-00	MYLAR	0.22MF	10%	100V	
C303	1-124-122-11	ELECT	100MF	20%	50V	
C304	1-106-228-00	MYLAR	0.22MF	10%	100V	
C305	1-124-119-00	ELECT	330MF	20%	16V	
C306	1-124-902-00	ELECT	0.47MF	20%	50V	
C307	1-124-902-00	ELECT	0.47MF	20%	50V	
C308	1-124-902-00	ELECT	0.47MF	20%	50V	
C309	1-124-902-00	ELECT	0.47MF	20%	50V	
C310	1-106-220-00	MYLAR	0.1MF	10%	100V	
C311	1-106-220-00	MYLAR	0.1MF	10%	100V	
C312	1-124-902-00	ELECT	0.47MF	20%	50V	
C313	1-124-902-00	ELECT	0.47MF	20%	50V	
C314	1-124-902-00	ELECT	0.47MF	20%	50V	
C315	1-124-791-11	ELECT	1MF	20%	50V	
C316	1-106-220-00	MYLAR	0.1MF	10%	100V	
C317	1-124-910-11	ELECT	47MF	20%	50V	
C318	1-106-220-00	MYLAR	0.1MF	10%	100V	
C320	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C322	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C323	1-102-947-00	CERAMIC	10PF	0.5PF	50V	
C327	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C330	1-163-113-00	CERAMIC CHIP	68PF	5%	50V	
C331	1-106-220-00	MYLAR	0.1MF	10%	100V	
C332	1-126-103-11	ELECT	470MF	20%	16V	
C333	1-106-375-12	MYLAR	0.022MF	10%	250V	
C334	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C335	1-163-097-00	CERAMIC CHIP	15PF	5%	50V	
C336	1-102-816-00	CERAMIC	120PF	5%	50V	
C337	1-101-004-00	CERAMIC	0.01MF		50V	
C338	1-106-220-00	MYLAR	0.1MF	10%	100V	
C339	1-106-220-00	MYLAR	0.1MF	10%	100V	
C341	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C343	1-106-383-00	MYLAR	0.047MF	10%	100V	
C344	1-130-783-00	MYLAR	0.33MF	10%	100V	
C345	1-163-123-00	CERAMIC CHIP	180PF	5%	50V	
C346	1-163-033-00	CERAMIC CHIP	0.022MF		50V	

B

REF.NO.	PART NO.	DESCRIPTION			REMARK
C347	1-124-791-11	ELECT	1MF	20%	50V
C348	1-124-791-11	ELECT	1MF	20%	50V
C349	1-101-004-00	CERAMIC	0.01MF		50V
C350	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C351	1-106-375-12	MYLAR	0.022MF	10%	250V
C352	1-106-375-12	MYLAR	0.022MF	10%	250V
C353	1-163-063-00	CERAMIC CHIP	0.022MF	10%	50V
C354	1-124-910-11	ELECT	47MF	20%	50V
C357	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C358	1-124-917-11	ELECT	33MF	20%	50V
C359	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C360	1-101-004-00	CERAMIC	0.01MF		50V
C364	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C365	1-124-910-11	ELECT	47MF	20%	50V
C366	1-126-103-11	ELECT	470MF	20%	16V
C367	1-101-004-00	CERAMIC	0.01MF		50V
C381	1-124-902-00	ELECT	0.47MF	20%	50V
C382	1-124-927-11	ELECT	4.7MF	20%	50V
C384	1-124-910-11	ELECT	47MF	20%	50V
C385	1-124-927-11	ELECT	4.7MF	20%	50V
C386	1-124-927-11	ELECT	4.7MF	20%	50V
C387	1-130-833-00	MYLAR	0.82MF	10%	63V
C388	1-106-220-00	MYLAR	0.1MF	10%	100V
C401	1-101-361-00	CERAMIC	150PF	5%	50V
C402	1-163-197-00	CERAMIC CHIP	470PF	5%	50V
C403	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C1311	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C1312	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C1313	1-102-953-00	CERAMIC	18PF	5%	50V

<TRIMMER>

CT331	1-141-418-11	CAP, ADJ
CT332	1-141-418-11	CAP, ADJ

<DIODE>

D301	8-719-911-19	DIODE 1SS119
D302	8-719-911-19	DIODE 1SS119
D303	8-719-911-19	DIODE 1SS119
D304	8-719-911-19	DIODE 1SS119
D305	8-719-911-19	DIODE 1SS119
D307	8-719-929-24	DIODE HZS11NB3
D308	8-719-911-19	DIODE 1SS119
D309	8-719-911-19	DIODE 1SS119
D310	8-719-929-24	DIODE HZS11NB3
D311	8-719-929-24	DIODE HZS11NB3
D312	8-719-929-24	DIODE HZS11NB3
D313	8-719-911-19	DIODE 1SS119
D314	8-719-911-19	DIODE 1SS119
D315	8-719-911-19	DIODE 1SS119
D316	8-719-911-19	DIODE 1SS119
D317	8-719-911-19	DIODE 1SS119
D318	8-719-911-19	DIODE 1SS119
D319	8-719-911-19	DIODE 1SS119
D320	8-719-911-19	DIODE 1SS119
D331	8-719-911-19	DIODE 1SS119
D332	8-719-911-19	DIODE 1SS119
D333	8-719-911-19	DIODE 1SS119
D350	8-719-928-94	DIODE HZS5.6NB3

<DELAY LINE>

DL332	1-236-062-11	MODULE, Y DELAY LINE
DL401	1-415-613-11	DELAY LINE, Y

<IC>

IC301	8-759-979-85	IC TDA4580-V4
IC302	8-759-980-60	IC TDA8442N3
IC303	8-759-040-53	IC MC14053BCP
IC331	8-759-990-29	IC TDA4650
IC332	8-759-505-39	IC TDA4660V2
IC1301	1-235-534-11	CONTROL MODULE, PICTURE

<COIL>

L301	1-410-868-11	INDUCTOR	4.7UH
L302	1-410-868-11	INDUCTOR	4.7UH
L331	1-404-554-11	COIL	
L336	1-404-554-11	COIL	
L338	1-408-409-00	INDUCTOR	10UH
L1301	1-408-425-00	INDUCTOR	220UH
L1302	1-408-419-00	INDUCTOR	68UH

<TRANSISTOR>

Q303	8-729-271-22	TRANSISTOR 2SC2712-G
Q305	8-729-901-00	TRANSISTOR DTC124EK
Q306	8-729-119-78	TRANSISTOR 2SC2785-HFE
Q311	8-729-271-22	TRANSISTOR 2SC2712-G
Q312	8-729-271-22	TRANSISTOR 2SC2712-G
Q313	8-729-271-22	TRANSISTOR 2SC2712-G
Q316	8-729-271-22	TRANSISTOR 2SC2712-G
Q330	8-729-216-22	TRANSISTOR 2SA1162-G
Q331	8-729-901-00	TRANSISTOR DTC124EK
Q332	8-729-216-22	TRANSISTOR 2SA1162-G
Q333	8-729-216-22	TRANSISTOR 2SA1162-G
Q334	8-729-271-22	TRANSISTOR 2SC2712-G
Q335	8-729-271-22	TRANSISTOR 2SC2712-G
Q336	8-729-900-36	TRANSISTOR DTC124ES
Q381	8-729-901-00	TRANSISTOR DTC124EK
Q382	8-729-271-22	TRANSISTOR 2SC2712-G
Q1301	8-729-901-00	TRANSISTOR DTC124EK
Q1305	8-729-271-22	TRANSISTOR 2SC2712-G
Q1306	8-729-271-22	TRANSISTOR 2SC2712-G

<RESISTOR>

JR384	1-216-295-00	METAL GLAZE	0	5%	1/10W
R301	1-249-409-11	CARBON	220	5%	1/4W
R302	1-249-409-11	CARBON	220	5%	1/4W
R303	1-249-409-11	CARBON	220	5%	1/4W
R304	1-249-409-11	CARBON	220	5%	1/4W
R305	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R307	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R308	1-216-184-00	METAL GLAZE	270	5%	1/8W
R309	1-216-025-00	METAL GLAZE	100	5%	1/10W
R310	1-216-025-00	METAL GLAZE	100	5%	1/10W
R311	1-216-025-00	METAL GLAZE	100	5%	1/10W
R312	1-249-409-11	CARBON	220	5%	1/4W
R313	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R314	1-216-182-00	METAL GLAZE	220	5%	1/8W
R315	1-216-027-00	METAL GLAZE	120	5%	1/10W
R316	1-216-027-00	METAL GLAZE	120	5%	1/10W
R317	1-216-027-00	METAL GLAZE	120	5%	1/10W
R318	1-249-429-11	CARBON	10K	5%	1/4W
R319	1-249-409-11	CARBON	220	5%	1/4W

B F A

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R320	1-216-198-00	METAL GLAZE	1K	5%	1/8W	
R321	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R322	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R323	1-249-422-11	CARBON	2.7K	5%	1/4W	
R324	1-249-429-11	CARBON	10K	5%	1/4W	
R325	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R328	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R329	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R330	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R331	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R332	1-216-184-00	METAL GLAZE	270	5%	1/8W	
R333	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R334	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R335	1-247-852-11	CARBON	7.5K	5%	1/4W	
R336	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R337	1-216-184-00	METAL GLAZE	270	5%	1/8W	
R338	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R339	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R340	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R341	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R342	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R344	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R346	1-216-202-00	METAL GLAZE	1.5K	5%	1/8W	
R347	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R348	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R354	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R355	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R356	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R357	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R358	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R359	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R360	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R361	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R362	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R363	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R364	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R365	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R366	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R367	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R370	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R372	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R376	1-249-429-11	CARBON	10K	5%	1/4W	
R377	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R378	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R379	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R380	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R381	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R382	1-216-103-00	METAL GLAZE	180K	5%	1/10W	
R383	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R384	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R385	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R386	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R387	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R388	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R389	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R390	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R391	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R392	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R393	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R394	1-216-019-00	METAL GLAZE	56	5%	1/10W	
R395	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W	
R396	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R398	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R401	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R402	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R403	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R404	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R405	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R406	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R407	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R410	1-216-184-00	METAL GLAZE	270	5%	1/8W	
R412	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R1301	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R1302	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1303	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1304	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R1305	1-216-001-00	METAL GLAZE	10	5%	1/10W	

<VARIABLE RESISTOR>

RV331	1-238-012-11	RES, ADJ, CARBON 1K	

<CRYSTAL>

X331	1-567-307-11	OSCILLATOR, CRYSTAL	
X332	1-567-131-00	OSCILLATOR, CRYSTAL	

****

	*1-633-408-11	F BOARD	
		*******	
	*1-566-664-11	PIN, CONNECTOR 4P	

<FUSE>

F1601⚠	1-532-350-11	FUSE, TIME-LAG 4A/250V	
	1-533-230-11	HOLDER, FUSE; F1601	

<SWITCH>

S1701⚠	1-571-433-11	SWITCH, PUSH (AC POWER)	

****

	*A-1632-005-A	A BOARD, COMPLETE	
		**********	
	*1-560-290-00	PLUG, CONNECTOR (2.5MM PITCH)	
	*1-564-881-11	PLUG, CONNECTOR 4P	
	*1-564-886-11	PLUG, CONNECTOR 9P	
	*1-565-393-11	CONNECTOR, BOARD TO BOARD	
	*1-565-503-11	CONNECTOR, BOARD TO BOARD 12P	

<CAPACITOR>

C101	1-126-233-11	ELECT	22MF	20%	50V
C102	1-126-103-11	ELECT	470MF	20%	16V
C104	1-124-910-11	ELECT	47MF	20%	50V
C106	1-126-233-11	ELECT	22MF	20%	50V
C108	1-136-165-00	FILM	0.1MF	5%	50V
C109	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C111	1-124-925-11	ELECT	2.2MF	20%	50V
C115	1-124-925-11	ELECT	2.2MF	20%	50V
C127	1-124-122-11	ELECT	100MF	20%	50V
C128	1-124-910-11	ELECT	47MF	20%	50V
C129	1-124-910-11	ELECT	47MF	20%	50V
C138	1-136-165-00	FILM	0.1MF	5%	50V
C171	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C172	1-163-005-11	CERAMIC CHIP	470PF	10%	50V

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

A C

REF.NO.	PART NO.	DESCRIPTION			REMARK
C177	1-102-074-00	CERAMIC	0.001MF	10%	50V
C181	1-101-004-00	CERAMIC	0.01MF		50V
		<IC>			
IC103	8-759-979-62	IC PCF8574			
		<COIL>			
L100	1-410-116-11	INDUCTOR	0.56MMH		
L101	1-408-225-00	INDUCTOR	3.3UH		
L102	1-408-413-00	INDUCTOR	22UH		
L107	1-408-397-00	INDUCTOR	1UH		
		<TRANSISTOR>			
Q113	8-729-271-22	TRANSISTOR 2SC2712-G			
Q114	8-729-271-22	TRANSISTOR 2SC2712-G			
Q115	8-729-271-22	TRANSISTOR 2SC2712-G			
Q116	8-729-271-22	TRANSISTOR 2SC2712-G			
Q125	8-729-900-89	TRANSISTOR DTC144ES			
Q126	8-729-901-06	TRANSISTOR DTA144EK			
Q181	8-729-271-22	TRANSISTOR 2SC2712-G			
		<RESISTOR>			
JR230	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR252	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR253	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR255	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR256	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR257	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR258	1-216-296-00	METAL GLAZE	0	5%	1/8W
R101	1-216-025-00	METAL GLAZE	100	5%	1/10W
R105	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R107	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R108	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R110	1-249-429-11	CARBON	10K	5%	1/4W
R111	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R116	1-216-023-00	METAL GLAZE	82	5%	1/10W
R118	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R128	1-216-027-00	METAL GLAZE	120	5%	1/10W
R129	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R130	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R157	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R158	1-249-409-11	CARBON	220	5%	1/4W
R159	1-249-409-11	CARBON	220	5%	1/4W
R161	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R162	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R163	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R164	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R165	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R167	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R168	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R169	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R181	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R182	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R193	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R194	1-216-017-00	METAL GLAZE	47	5%	1/10W
R195	1-216-017-00	METAL GLAZE	47	5%	1/10W
R196	1-216-113-00	METAL GLAZE	470K	5%	1/10W
		<TUNER>			
TU101⚠	1-465-301-11	TUNER, ET (UV-816(PLL))			

REF.NO.	PART NO.	DESCRIPTION			REMARK
		<IF BLOCK>			
VIF101	1-466-154-21	IF BLOCK (IFG-389S)			
**********					
	*A-1638-007-A	C BOARD, COMPLETE			
		**********			
	1-506-348-99	PIN, CONNECTOR 3P			
	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P			
	*1-568-878-51	PIN, CONNECTOR 3P			
	*1-568-881-51	PIN, CONNECTOR 6P			
	*4-379-160-01	COVER (REAR LID), CV			
	*4-379-167-01	COVER (MAIN), CV			
		<CAPACITOR>			
C703	1-102-980-00	CERAMIC	270PF	5%	50V
C704	1-102-116-00	CERAMIC	680PF	10%	50V
C705	1-102-978-00	CERAMIC	220PF	5%	50V
C706	1-102-116-00	CERAMIC	680PF	10%	50V
C707	1-162-116-00	CERAMIC	680PF	10%	2KV
C708	1-162-114-00	CERAMIC	0.0047MF		2KV
C709	1-102-116-00	CERAMIC	680PF	10%	50V
C710	1-123-947-00	ELECT	10MF	20%	250V
C711	1-101-880-00	CERAMIC	47PF	5%	50V
C712	1-102-980-00	CERAMIC	270PF	5%	50V
C714	1-124-360-00	ELECT	1000MF	20%	16V
C716	1-162-622-11	CERAMIC	330PF	10%	400V
C717	1-102-114-00	CERAMIC	470PF	10%	50V
C718	1-102-114-00	CERAMIC	470PF	10%	50V
C719	1-102-114-00	CERAMIC	470PF	10%	50V
		<DIODE>			
D701	8-719-929-16	DIODE HZS9.1NB3			
D702	8-719-911-19	DIODE 1SS119			
D703	8-719-911-19	DIODE 1SS119			
D704	8-719-911-19	DIODE 1SS119			
D705	8-719-911-19	DIODE 1SS119			
D706	8-719-911-19	DIODE 1SS119			
D707	8-719-911-19	DIODE 1SS119			
D708	8-719-911-19	DIODE 1SS119			
D709	8-719-911-19	DIODE 1SS119			
D710	8-719-911-19	DIODE 1SS119			
D711	8-719-300-33	DIODE RU-3AM			
D713	8-719-911-19	DIODE 1SS119			
		<JACK>			
J701	1-526-990-11	SOCKET, PICTURE TUBE			
		<COIL>			
L704	1-410-878-11	INDUCTOR	33UH		
		<TRANSISTOR>			
Q702	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q703	8-729-906-70	TRANSISTOR BF871			
Q704	8-729-200-17	TRANSISTOR 2SA1091-O			
Q705	8-729-119-78	TRANSISTOR 2SC2785-HFE			
Q706	8-729-906-70	TRANSISTOR BF871			

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

C D

REF.NO.	PART NO.	DESCRIPTION				REMARK
Q707	8-729-200-17	TRANSISTOR 2SA1091-O				
Q708	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q709	8-729-906-70	TRANSISTOR BF871				
Q710	8-729-200-17	TRANSISTOR 2SA1091-O				
		<RESISTOR>				
R704	1-216-486-00	METAL OXIDE	8.2K	5%	3W	F
R705	1-202-824-00	SOLID	3.3K	10%	1/2W	
R706	1-249-409-11	CARBON	220	5%	1/4W	
R707	1-249-412-11	CARBON	390	5%	1/4W	
R708	1-249-401-11	CARBON	47	5%	1/4W	
R709	1-202-844-00	SOLID	330K	10%	1/2W	
R710	1-215-465-00	METAL	68K	1%	1/6W	
R711	1-249-426-11	CARBON	5.6K	5%	1/4W	
R712	1-249-417-11	CARBON	1K	5%	1/4W	
R713	1-215-471-00	METAL	120K	1%	1/6W	
R714	1-216-486-00	METAL OXIDE	8.2K	5%	3W	F
R715	1-202-824-00	SOLID	3.3K	10%	1/2W	
R716	1-249-409-11	CARBON	220	5%	1/4W	
R717	1-249-415-11	CARBON	680	5%	1/4W	
R718	1-202-814-11	SOLID	33K	10%	1/2W	
R719	1-249-401-11	CARBON	47	5%	1/4W	
R720	1-249-423-11	CARBON	3.3K	5%	1/4W	
R721	1-202-842-11	SOLID	220K	10%	1/2W	
R722	1-202-848-00	SOLID	680K	10%	1/2W	
R723	1-249-417-11	CARBON	1K	5%	1/4W	
R724	1-202-846-00	SOLID	470K	10%	1/2W	
R725	1-202-838-00	SOLID	100K	10%	1/2W	
R726	1-202-824-00	SOLID	3.3K	10%	1/2W	
R727	1-249-409-11	CARBON	220	5%	1/4W	
R728	1-216-347-11	METAL OXIDE	0.68	5%	1W	F
R729	1-249-416-11	CARBON	820	5%	1/4W	
R730	1-249-401-11	CARBON	47	5%	1/4W	
R731	1-249-423-11	CARBON	3.3K	5%	1/4W	
R732	1-249-415-11	CARBON	680	5%	1/4W	
R733	1-249-415-11	CARBON	680	5%	1/4W	
R734	1-249-405-11	CARBON	100	5%	1/4W	
R735	1-215-493-00	METAL	1M	1%	1/6W	
R736	1-216-486-00	METAL OXIDE	8.2K	5%	3W	F
R737	1-215-485-00	METAL	470K	1%	1/6W	
R739	1-249-417-11	CARBON	1K	5%	1/4W	
		<VARIABLE RESISTOR>				
RV701	1-230-641-11	RES, ADJ, METAL GLAZE 2.2M				
RV702⚠	1-230-619-11	RES, ADJ, METAL GLAZE 110M				
RV703	1-237-749-11	RES, ADJ, CARBON 2200				
RV704	1-237-749-11	RES, ADJ, CARBON 2200				
		**********				
	*A-1642-008-A	D BOARD, COMPLETE				
		**********				
	*1-508-765-00	PIN, CONNECTOR (5MM PITCH) 3P				
	*1-508-786-00	PIN, CONNECTOR (5MM PITCH) 2P				
	*1-560-290-00	PLUG, CONNECTOR (2.5MM PITCH)				
	*1-565-394-11	PIN, BOARD TO BOARD CONNECTOR				
	*1-566-367-11	CONNECTOR, HINGE (RECEPTACLE)				
	1-568-106-11	PIN, CONNECTOR 4P				
	*1-568-536-11	PLUG (MINIATURE DY) 6P				
	*1-568-878-51	PIN, CONNECTOR 3P				
	*1-568-881-51	PIN, CONNECTOR 6P				
	*1-568-882-51	PIN, CONNECTOR 7P				
	4-200-001-01	HOLDER, IC				
	*4-341-751-01	EYELET				
	*4-341-752-01	EYELET				
	*4-368-683-01	SPRING				
		<CAPACITOR>				
C002	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C003	1-123-875-11	ELECT	10MF	20%	50V	
C004	1-124-120-11	ELECT	220MF	20%	16V	
C005	1-124-791-11	ELECT	1MF	20%	50V	
C006	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C007	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C008	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C009	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C010	1-124-120-11	ELECT	220MF	20%	16V	
C011	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C012	1-123-875-11	ELECT	10MF	20%	50V	
C013	1-106-220-00	MYLAR	0.1MF	10%	100V	
C014	1-106-220-00	MYLAR	0.1MF	10%	100V	
C015	1-124-902-00	ELECT	0.47MF	20%	50V	
C016	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C017	1-106-220-00	MYLAR	0.1MF	10%	100V	
C018	1-163-127-00	CERAMIC CHIP	270PF	5%	50V	
C019	1-106-383-00	MYLAR	0.047MF	10%	100V	
C020	1-124-917-11	ELECT	33MF	20%	50V	
C021	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C022	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C023	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C024	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C025	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C027	1-124-910-11	ELECT	47MF	20%	50V	
C029	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C030	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C031	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C032	1-163-081-00	CERAMIC CHIP	0.22MF		25V	
C251	1-124-791-11	ELECT	1MF	20%	50V	
C252	1-126-233-11	ELECT	22MF	20%	50V	
C253	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C254	1-106-220-00	MYLAR	0.1MF	10%	100V	
C255	1-124-636-00	ELECT	3300MF	20%	25V	
C261	1-124-791-11	ELECT	1MF	20%	50V	
C262	1-126-233-11	ELECT	22MF	20%	50V	
C263	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C264	1-106-220-00	MYLAR	0.1MF	10%	100V	
C265	1-124-564-11	ELECT	4700MF	20%	25V	
C501	1-124-927-11	ELECT	4.7MF	20%	50V	
C502	1-124-927-11	ELECT	4.7MF	20%	50V	
C503	1-106-371-00	MYLAR	0.015MF	10%	400V	
C504	1-163-121-00	CERAMIC CHIP	150PF	5%	50V	
C505	1-108-794-11	MYLAR	0.0015MF	5%	50V	
C506	1-106-375-12	MYLAR	0.022MF	10%	250V	
C507	1-130-783-00	MYLAR	0.33MF	10%	100V	
C508	1-106-375-12	MYLAR	0.022MF	10%	250V	
C509	1-106-220-00	MYLAR	0.1MF	10%	100V	
C510	1-161-959-00	CERAMIC	22PF	10%	500V	
C511	1-108-620-11	MYLAR	0.0033MF	10%	100V	
C512	1-106-220-00	MYLAR	0.1MF	10%	100V	
C513	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C514	1-106-228-00	MYLAR	0.22MF	10%	100V	
C515	1-124-791-11	ELECT	1MF	20%	50V	
C516	1-108-614-11	MYLAR	0.001MF	10%	100V	
C517	1-124-252-00	ELECT	0.33MF	20%	50V	
C518	1-124-902-00	ELECT	0.47MF	20%	50V	
C519	1-136-171-00	FILM	0.33MF	5%	50V	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

D

REF.NO.	PART NO.	DESCRIPTION			REMARK
C520	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C521	1-106-220-00	MYLAR	0.1MF	10%	100V
C522	1-124-122-11	ELECT	100MF	20%	50V
C523	1-108-614-11	MYLAR	0.001MF	10%	100V
C524	1-108-798-11	MYLAR	0.0033MF	5%	50V
C525	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C526	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C527	1-106-220-00	MYLAR	0.1MF	10%	100V
C531	1-124-190-00	ELECT	680MF	10%	25V
C532	1-124-514-11	ELECT	100MF	20%	50V
C533	1-106-216-00	MYLAR	0.068MF	10%	100V
C534	1-124-120-11	ELECT	220MF	20%	16V
C536	1-131-365-00	TANTALUM	10MF	10%	16V
C537	1-124-791-11	ELECT	1MF	20%	50V
C538	1-108-614-11	MYLAR	0.001MF	10%	100V
C539	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C540	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C592	1-124-122-11	ELECT	100MF	20%	50V
C593	1-163-129-00	CERAMIC CHIP	330PF	5%	50V
C601 ⚠	1-161-964-61	CERAMIC	0.0047MF		250V
C602 ⚠	1-161-964-61	CERAMIC	0.0047MF		250V
C603 ⚠	1-161-964-61	CERAMIC	0.0047MF		250V
C604 ⚠	1-125-318-11	ELECT(BLOCK)	220MF	20%	400V
C605	1-124-510-11	ELECT	220MF	20%	35V
C606	1-163-137-00	CERAMIC CHIP	680PF	5%	50V
C607	1-130-834-00	MYLAR	1MF	10%	63V
C608	1-124-927-11	ELECT	4.7MF	20%	50V
C611	1-124-910-11	ELECT	47MF	20%	50V
C612	1-108-614-11	MYLAR	0.001MF	10%	100V
C613	1-136-539-11	FILM	0.0022MF	3%	2KV
C614	1-102-030-00	CERAMIC	330PF	10%	500V
C615	1-124-557-11	ELECT	1000MF	20%	25V
C616	1-102-030-00	CERAMIC	330PF	10%	500V
C617	1-124-122-11	ELECT	100MF	20%	50V
C618	1-162-115-00	CERAMIC	330PF	10%	2KV
C619	1-124-556-11	ELECT	2200MF	20%	16V
C620	1-136-173-00	FILM	0.47MF	5%	50V
C621	1-124-347-00	ELECT	100MF	20%	160V
C622	1-124-556-11	ELECT	2200MF	20%	16V
C623	1-124-910-11	ELECT	47MF	20%	50V
C624	1-124-122-11	ELECT	100MF	20%	50V
C625	1-124-360-00	ELECT	1000MF	20%	16V
C626	1-123-875-11	ELECT	10MF	20%	50V
C627	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C631	1-124-927-11	ELECT	4.7MF	20%	50V
C632	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C633	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C801	1-126-105-11	ELECT	1000MF	20%	35V
C802	1-102-030-00	CERAMIC	330PF	10%	500V
C804	1-123-948-00	ELECT	22MF	20%	250V
C805	1-162-114-00	CERAMIC	0.0047MF		2KV
C806	1-106-220-00	MYLAR	0.1MF	10%	100V
C807	1-106-395-00	MYLAR	0.15MF	10%	200V
C810	1-123-024-21	ELECT	33MF		160V
C811	1-136-113-00	FILM	2MF	5%	200V
C812	1-124-634-11	ELECT	1MF	20%	250V
C813	1-102-212-00	CERAMIC	820PF	10%	500V
C814 ⚠	1-161-731-11	CERAMIC	0.001MF	10%	2KV
C815	1-136-540-11	FILM	0.82MF	5%	200V
C817	1-136-591-11	FILM	0.017MF	3%	1.4KV
C818	1-136-759-11	FILM	0.039MF	10%	630V
C819 ⚠	1-161-731-11	CERAMIC	0.001MF	10%	2KV
C820	1-106-218-00	MYLAR	0.0082MF	10%	400V
C821 ⚠	1-162-134-51	CERAMIC	470PF	10%	2KV
C822	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C823	1-106-359-00	MYLAR	0.0047MF	10%	400V
C824	1-102-212-00	CERAMIC	820PF	10%	500V
C825	1-106-375-12	MYLAR	0.022MF	10%	250V
C1601 ⚠	1-136-518-11	FILM	0.33MF	20%	300V
C1602 ⚠	1-136-519-11	FILM	0.47MF	20%	300V
C1603 ⚠	1-162-578-51	CERAMIC	0.0047MF	20%	400V
C1604 ⚠	1-162-578-51	CERAMIC	0.0047MF	20%	400V
C1605 ⚠	1-162-578-51	CERAMIC	0.0047MF	20%	400V
C1606 ⚠	1-162-578-51	CERAMIC	0.0047MF	20%	400V
C1607 ⚠	1-161-964-61	CERAMIC	0.0047MF		250V

<FILTER>

CF001	1-577-364-11	VIBRATOR, CERAMIC
CF501	1-567-888-11	OSCILLATOR, CERAMIC

<DIODE>

D001	8-719-911-19	DIODE 1SS119
D002	8-719-929-03	DIODE HZS6.8NB3
D003	8-719-911-19	DIODE 1SS119
D004	8-719-911-19	DIODE 1SS119
D005	8-719-109-89	DIODE RD5.6ES-B2
D006	8-719-929-71	DIODE HZS33NB1
D007	8-719-911-19	DIODE 1SS119
D009	8-719-109-89	DIODE RD5.6ES-B2
D010	8-719-120-78	DIODE RD6.2ES-L3
D011	8-719-120-78	DIODE RD6.2ES-L3
D013	8-719-109-89	DIODE RD5.6ES-B2
D271	8-719-110-36	DIODE RD13ES-B2
D272	8-719-911-19	DIODE 1SS119
D501	8-719-911-19	DIODE 1SS119
D504	8-719-911-55	DIODE U05G
D506	8-719-800-76	DIODE 1SS226
D508	8-719-911-19	DIODE 1SS119
D509	8-719-911-19	DIODE 1SS119
D511	8-719-911-55	DIODE U05G
D512	8-719-911-55	DIODE U05G
D513	8-719-928-85	DIODE HZS4.7NB2
D514	8-719-911-19	DIODE 1SS119
D515	8-719-911-19	DIODE 1SS119
D601 ⚠	8-719-946-90	DIODE KBU4JL-6088
D602	8-719-300-33	DIODE RU-3AM
D603	8-719-911-55	DIODE U05G
D604	8-719-911-55	DIODE U05G
D605	8-719-911-55	DIODE U05G
D606	8-719-300-33	DIODE RU-3AM
D607	8-719-300-33	DIODE RU-3AM
D608	8-719-300-33	DIODE RU-3AM
D609	8-719-929-71	DIODE HZS33NB1
D610	8-719-300-59	DIODE CTU-12S
D611	8-719-900-26	DIODE ERD29-08J
D612	8-719-300-59	DIODE CTU-12S
D613	8-719-979-85	DIODE EGP20G
D614	8-719-979-85	DIODE EGP20G
D616	8-719-120-78	DIODE RD6.2ES-L3
D617	8-719-911-19	DIODE 1SS119
D618	8-719-109-89	DIODE RD5.6ES-B2
D619	8-719-929-71	DIODE HZS33NB1
D620	8-719-800-76	DIODE 1SS226
D621	8-719-929-71	DIODE HZS33NB1
D622	8-719-911-19	DIODE 1SS119
D623	8-719-911-19	DIODE 1SS119
D624	8-719-911-19	DIODE 1SS119

D

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION	REMARK
D630	8-719-110-39	DIODE RD15ES-B1	
D801	8-719-300-33	DIODE RU-3AM	
D802	8-719-300-33	DIODE RU-3AM	
D803	8-719-300-65	DIODE ES1F	
D804	8-719-911-55	DIODE U05G	
D805	8-719-911-55	DIODE U05G	
D806	8-719-945-80	DIODE ERC06-15S	
D807	8-719-945-80	DIODE ERC06-15S	
D808	8-719-900-26	DIODE ERD29-08J	
		<IC>	
IC001	8-759-501-66	IC SDA2083-B012	
IC002	8-752-332-82	IC CXD1050A-09P	
IC003	8-759-945-58	IC RC4558P	
IC005	8-759-748-56	IC SDA2546	
IC251	8-759-988-94	IC TDA2050	
	4-201-023-01	SPACER, INSULATING; IC251	
	4-812-134-00	RIVET NYLON, 3.5; IC251	
IC261	8-759-988-94	IC TDA2050	
	4-201-023-01	SPACER, INSULATING; IC261	
	4-812-134-00	RIVET NYLON, 3.5; IC261	
IC501	8-759-970-73	IC TEA2028B	
IC502	8-759-944-57	IC TDA8170	
IC601	8-759-988-95	IC TEA2260	
IC604	8-759-144-84	IC UPC24M05HF	
IC608	8-759-037-26	IC TYA7812CT	
		<COIL>	
L001	1-408-414-00	INDUCTOR 27UH	
L501	1-408-225-00	INDUCTOR 3.3UH	
L601	*1-420-872-00	COIL, AIR CORE	
L602	1-410-396-41	FERRITE BEAD INDUCTOR	
L603	1-410-396-41	FERRITE BEAD INDUCTOR	
L604	1-410-671-31	INDUCTOR 47UH	
L605	1-459-585-11	COIL (WITH CORE) (DRUM TYPE)	
L606	1-421-013-00	COIL (HORIZONTAL CHOKE) 25UH	
L607	1-410-671-31	INDUCTOR 47UH	
L801	1-459-087-00	COIL,HCC DUST CRE 3.9MMH	
L803	1-459-104-00	COIL, DUST CORE	
L804	1-408-239-00	INDUCTOR 4.7MMH	
L805 ⚠	1-459-907-22	COIL, HORIZONTAL LINEARITY	
L806	1-459-087-00	COIL,HCC DUST CORE 3.9MMH	
L809	*1-420-872-00	COIL, AIR CORE	
L810 ⚠	1-421-794-21	TRANSFORMER, FERRITE (PMT)	
		<TRANSFORMER>	
LF1601⚠	1-421-866-12	LFT	
LF1602⚠	1-421-776-11	LFT	
LF1603⚠	1-421-592-21	TRANSFORMER, FERRITE	
T601 ⚠	1-450-037-11	S.R.T	
T602 ⚠	1-424-277-11	TRANSFORMER, TRIGGER PULSE	
T801 ⚠	1-437-090-21	HDT	
T802 ⚠	1-439-416-11	TRANSFORMER ASSY, FLYBACK (UX-1600)	
		<IC LINK>	
PS601⚠	1-532-984-91	LINK, IC (ICP-N50) 2A	
PS602⚠	1-532-984-91	LINK, IC (ICP-N50) 2A	
PS603⚠	1-532-679-91	LINK, IC (ICP-N15) 0.6A	

REF.NO.	PART NO.	DESCRIPTION	REMARK
		<TRANSISTOR>	
Q001	8-729-901-01	TRANSISTOR DTC144EK	
Q002	8-729-901-06	TRANSISTOR DTA144EK	
Q003	8-729-216-22	TRANSISTOR 2SA1162-G	
Q004	8-729-216-22	TRANSISTOR 2SA1162-G	
Q005	8-729-901-01	TRANSISTOR DTC144EK	
Q006	8-729-901-01	TRANSISTOR DTC144EK	
Q007	8-729-271-22	TRANSISTOR 2SC2712-G	
Q008	8-729-271-22	TRANSISTOR 2SC2712-G	
Q009	8-729-271-22	TRANSISTOR 2SC2712-G	
Q251	8-729-271-22	TRANSISTOR 2SC2712-G	
Q261	8-729-271-22	TRANSISTOR 2SC2712-G	
Q271	8-729-271-22	TRANSISTOR 2SC2712-G	
Q502	8-729-216-22	TRANSISTOR 2SA1162-G	
Q505	8-729-140-96	TRANSISTOR 2SD774-34	
Q506	8-729-140-97	TRANSISTOR 2SB734-34	
Q507	8-729-216-22	TRANSISTOR 2SA1162-G	
Q598	8-729-216-22	TRANSISTOR 2SA1162-G	
Q601	8-729-111-67	TRANSISTOR 2SB1094-L	
Q602	8-729-209-02	TRANSISTOR 2SD1548-LB	
Q603	8-729-111-67	TRANSISTOR 2SB1094-L	
Q604	8-729-216-22	TRANSISTOR 2SA1162-G	
Q605	8-729-271-22	TRANSISTOR 2SC2712-G	
Q606	8-729-271-22	TRANSISTOR 2SC2712-G	
Q607	8-729-920-92	TRANSISTOR 2SD2096-EF	
Q608	8-729-271-22	TRANSISTOR 2SC2712-G	
Q609	8-729-320-62	TRANSISTOR 2SD789-34	
Q801	8-729-271-22	TRANSISTOR 2SC2712-G	
Q804	8-729-304-50	TRANSISTOR 2SD1941-06	
Q805	8-729-119-80	TRANSISTOR 2SC2688-LK	
		<RESISTOR>	
JR1	1-216-295-00	METAL GLAZE 0 5% 1/10W	
R001	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R002	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R003	1-249-417-11	CARBON 1K 5% 1/4W	
R004	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R005	1-249-417-11	CARBON 1K 5% 1/4W	
R006	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R007	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R008	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R009	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R010	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R011	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R013	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R014	1-216-071-00	METAL GLAZE 8.2K 5% 1/10W	
R015	1-216-061-00	METAL GLAZE 3.3K 5% 1/10W	
R016	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R017	1-216-748-11	METAL GLAZE 39K 5% 1/10W	
R018	1-216-095-00	METAL GLAZE 82K 5% 1/10W	
R019	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R020	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R021	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R022	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R023	1-216-035-00	METAL GLAZE 270 5% 1/10W	
R024	1-216-049-00	METAL GLAZE 1K 5% 1/10W	
R025	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R026	1-249-417-11	CARBON 1K 5% 1/4W	
R027	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R028	1-216-025-00	METAL GLAZE 100 5% 1/10W	
R029	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R030	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R031	1-216-081-00	METAL GLAZE 22K 5% 1/10W	
R032	1-216-073-00	METAL GLAZE 10K 5% 1/10W	

D

REF.NO.	PART NO.	DESCRIPTION				REMARK
R033	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R034	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R035	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R036	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R037	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R038	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R039	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R040	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R041	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R042	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R043	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R044	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R045	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R046	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R047	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R048	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R049	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R050	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R051	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R052	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R053	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R054	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R055	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R056	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R057	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R058	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R059	1-249-417-11	CARBON	1K	5%	1/4W	
R060	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R061	1-249-417-11	CARBON	1K	5%	1/4W	
R062	1-249-417-11	CARBON	1K	5%	1/4W	
R063	1-249-429-11	CARBON	10K	5%	1/4W	
R064	1-249-417-11	CARBON	1K	5%	1/4W	
R065	1-249-429-11	CARBON	10K	5%	1/4W	
R066	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R067	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R068	1-249-417-11	CARBON	1K	5%	1/4W	
R069	1-249-417-11	CARBON	1K	5%	1/4W	
R070	1-249-417-11	CARBON	1K	5%	1/4W	
R071	1-249-417-11	CARBON	1K	5%	1/4W	
R072	1-249-417-11	CARBON	1K	5%	1/4W	
R073	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R074	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R075	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R076	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R077	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R078	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R251	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R252	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R253	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R254	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R255	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R256	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R257	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R258	1-215-869-11	METAL OXIDE	1K	5%	1W	F
R259	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R261	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R262	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R263	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R264	1-216-357-00	METAL OXIDE	4.7	5%	1W	F
R265	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R266	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R267	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R268	1-215-869-11	METAL OXIDE	1K	5%	1W	F
R269	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R271	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R272	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R273	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R500	1-216-115-00	METAL GLAZE	560K	5%	1/10W	
R501	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R502	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R503	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R504	1-249-420-11	CARBON	1.8K	5%	1/4W	
R505	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R506	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R509	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R510	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R514	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R515	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R518	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R519	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R520	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R521	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R522	1-215-469-00	METAL	100K	1%	1/6W	
R523	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R524	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R526	1-249-409-11	CARBON	220	5%	1/4W	F
R527	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R528	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R529	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R530	1-249-448-11	CARBON	1.2	5%	1/4W	F
R531	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R532	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R533	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R534	1-216-119-00	METAL GLAZE	820K	5%	1/10W	
R535	1-249-749-00	CARBON	2.2M	5%	1/4W	
R536	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W	
R537	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R538	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R539	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R540	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R541	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R542	1-216-308-00	METAL GLAZE	4.7	5%	1/10W	
R543	1-249-451-11	CARBON	2.2	5%	1/4W	
R544	1-247-745-11	CARBON	330	5%	1/2W	
R545	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R546	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R547	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R548	1-216-349-00	METAL OXIDE	1	5%	1W	F
R549	1-216-454-11	METAL OXIDE	390	5%	2W	F
R550	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R551	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W	
R553	1-216-869-11	METAL OXIDE	1K	5%	1W	
R554	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R555	1-216-129-00	METAL GLAZE	2.2M	5%	1/10W	
R556	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R557	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R558	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R559	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R560	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R561	1-216-107-00	METAL GLAZE	270K	5%	1/10W	
R570	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R591	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R592	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R593	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R594	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R597	1-216-041-00	METAL GLAZE	470	5%	1/10W	

D VM

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION				REMARK
R598	1-215-900-11	METAL OXIDE	22K	5%	2W	F
R600	1-249-381-11	CARBON	1	5%	1/4W	
R601	1-216-353-00	METAL OXIDE	2.2	5%	1W	F
R603	1-216-469-11	METAL OXIDE	12	5%	3W	F
R604	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R605	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R606	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R607	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R608 ⚠	1-216-488-51	METAL OXIDE	18K	5%	3W	F
R609	1-216-007-00	METAL GLAZE	18	5%	1/10W	
R610	1-244-941-00	CARBON	680K	5%	1/2W	
R611	1-216-015-00	METAL GLAZE	39	5%	1/10W	
R612	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R613	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R614	1-205-758-11	WIREWOUND	100	10%	10W	F
R616	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R617	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R618	1-216-431-11	METAL OXIDE	560	5%	1W	F
R619	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R620	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R621	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R622	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R623	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R624	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R625	1-215-865-11	METAL OXIDE	220	5%	1W	F
R626	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R628	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R629	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R633	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R634	1-216-430-11	METAL OXIDE	390	5%	1W	F
R635	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R636	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R643	1-217-189-21	WIREWOUND	0.12	5%	2W	F
R651	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R653	1-205-758-11	WIREWOUND	100	10%	10W	F
R802	1-249-443-11	CARBON	0.47	5%	1/4W	F
R805	1-249-448-11	CARBON	1.2	5%	1/4W	F
R806	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R807	1-215-869-11	METAL OXIDE	1K	5%	1W	F
R809	1-202-821-11	SOLID	1.8K	10%	1/2W	
R810	1-202-818-00	SOLID	1K	10%	1/2W	
R811	1-215-882-00	METAL OXIDE	22	5%	2W	F
R812	1-244-916-11	CARBON	62K	5%	1/2W	
R815	1-215-884-11	METAL OXIDE	47	5%	2W	F
R816	1-215-868-00	METAL OXIDE	680	5%	1W	F
R817	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R820	1-249-403-11	CARBON	68	5%	1/4W	
R821	1-247-725-11	CARBON	10K	5%	1/4W	F
R822 ⚠	1-217-778-61	FUSIBLE	1K	5%	1W	F
R825	1-216-345-11	METAL OXIDE	0.47	5%	1W	F
R826	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R827	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R828	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R829	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R831	1-249-451-11	CARBON	2.2	5%	1/4W	
R1601 ⚠	1-246-513-75	CARBON	47K	5%	1/4W	
R1602 ⚠	1-244-945-91	CARBON	1M	5%	1/2W	
R1603 ⚠	1-217-328-11	WIREWOUND	2.7	10%	7W	F
R1604 ⚠	1-246-513-75	CARBON	47K	5%	1/4W	
R1605 ⚠	1-218-265-91	METAL GLAZE	8.2M	5%	1W	
R5501	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R5503	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R5504	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R5505	1-216-001-00	METAL GLAZE	10	5%	1/10W	

REF.NO.	PART NO.	DESCRIPTION				REMARK
		<VARIABLE RESISTOR>				
RV501	1-238-013-11	RES, ADJ, CARBON 2.2K				
RV502	1-238-016-11	RES, ADJ, CARBON 10K				
RV601	1-238-011-11	RES, ADJ, CARBON 470				
		<SPARK GAP>				
SG801	1-519-422-11	GAP, SPARK				
		<THERMISTOR>				
THP601 ⚠	1-808-059-31	THERMISTOR, POSITIVE				
		**********				
	*1-634-193-11	VM BOARD				
		********				
	*1-568-878-51	PIN, CONNECTOR 3P				
		<CAPACITOR>				
C751	1-101-361-00	CERAMIC	150PF	5%	50V	
C752	1-108-629-11	MYLAR	0.018MF	10%	100V	
C753	1-106-367-00	MYLAR	0.01MF	10%	400V	
C754	1-102-980-00	CERAMIC	270PF	5%	50V	
C757	1-108-692-11	MYLAR	0.01MF	10%	200V	
C759	1-123-875-11	ELECT	10MF	20%	50V	
C760	1-124-917-11	ELECT	33MF	20%	50V	
C761	1-101-006-00	CERAMIC	0.047MF		50V	
C762	1-106-367-00	MYLAR	0.01MF	10%	400V	
		<COIL>				
L751	1-408-413-00	INDUCTOR	22UH			
L770	1-410-665-31	INDUCTOR	15UH			
		<TRANSISTOR>				
Q751	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q752	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q753	8-729-140-97	TRANSISTOR 2SB734-34				
Q754	8-729-140-96	TRANSISTOR 2SD774-34				
		<RESISTOR>				
R751	1-249-418-11	CARBON	1.2K	5%	1/4W	
R752	1-249-426-11	CARBON	5.6K	5%	1/4W	
R753	1-249-414-11	CARBON	560	5%	1/4W	
R754	1-249-434-11	CARBON	27K	5%	1/4W	
R755	1-249-405-11	CARBON	100	5%	1/4W	
R756	1-249-419-11	CARBON	1.5K	5%	1/4W	
R757	1-249-405-11	CARBON	100	5%	1/4W	
R758	1-249-409-11	CARBON	220	5%	1/4W	
R760	1-249-411-11	CARBON	330	5%	1/4W	
R761	1-249-429-11	CARBON	10K	5%	1/4W	
R762	1-247-895-00	CARBON	470K	5%	1/4W	
R763	1-249-429-11	CARBON	10K	5%	1/4W	
R764	1-249-455-11	CARBON	4.7	5%	1/4W	F
R765	1-249-455-11	CARBON	4.7	5%	1/4W	F
R766	1-247-753-11	CARBON	1.2K	5%	1/2W	
R767	1-247-751-11	CARBON	820	5%	1/2W	
R768	1-215-887-00	METAL OXIDE	150	5%	2W	F

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

VM H1 H2 J2 J1

REF.NO.	PART NO.	DESCRIPTION			REMARK
R769	⚠1-212-889-51	FUSIBLE	220 5%	1/4W F	
		**********			
	*1-633-409-11	H1 BOARD			
		********			
	1-562-837-11	JACK			
	*1-564-512-11	PLUG, CONNECTOR 9P			
	*1-568-879-51	PIN, CONNECTOR 4P			
	*1-568-881-51	PIN, CONNECTOR 6P			
	1-569-473-11	JACK BLOCK, PIN 3P			
		<RESISTOR>			
R1651	1-249-413-11	CARBON	470 5%	1/4W	
R1652	1-249-413-11	CARBON	470 5%	1/4W	
		<SWITCH>			
S1651	1-571-532-21	SWITCH, TACTIL			
S1652	1-571-532-21	SWITCH, TACTIL			
S1653	1-571-532-21	SWITCH, TACTIL			
		**********			
	*1-633-410-11	H2 BOARD			
		********			
	*1-568-882-51	PIN, CONNECTOR 7P			
	*4-374-987-01	GUIDE, LIGHT			
	*4-381-686-01	BRACKET (B), LIGHT GUIDE			
		<DIODE>			
D1651	8-719-948-31	DIODE LD-201VR			
	*4-201-076-01	HOLDER, LED; D1651			
D1652	8-719-948-31	DIODE LD-201VR			
	*4-201-076-01	HOLDER, LED; D1652			
D1654	8-719-948-31	DIODE LD-201VR			
	*4-201-076-01	HOLDER, LED; D1654			
		<IC>			
IC1651	8-741-138-70	IC BX-1387			
		<RESISTOR>			
R1662	1-249-413-11	CARBON	470 5%	1/4W	
		**********			
	*1-633-411-11	J2 BOARD			
		********			
	1-537-088-21	TERMINAL BOARD, INPUT/OUTPUT			
	*1-560-278-21	PLUG, CONNECTOR 4P			
	*1-564-517-11	PLUG, CONNECTOR 2P			
	*1-564-519-11	PLUG, CONNECTOR 4P			
		<CAPACITOR>			
C1751	1-101-005-00	CERAMIC	0.022MF		50V
C1752	1-101-005-00	CERAMIC	0.022MF		50V
C1755	1-102-114-00	CERAMIC	470PF	10%	50V
C1756	1-102-114-00	CERAMIC	470PF	10%	50V
		<COIL>			
L1751	1-412-240-11	INDUCTOR, WIDE BAND			
L1752	1-412-240-11	INDUCTOR, WIDE BAND			
		**********			

REF.NO.	PART NO.	DESCRIPTION			REMARK
	*A-1651-015-A	J1 BOARD, COMPLETE			
		**********			
	1-561-534-41	SOCKET 21P			
	*1-564-524-11	PLUG, CONNECTOR 9P			
	*1-564-527-11	PLUG, CONNECTOR 12P			
	*1-566-641-11	CONNECTOR, HINGE (TAB) 18P			
		<CAPACITOR>			
C203	1-124-925-11	ELECT	2.2MF	20%	50V
C205	1-124-927-11	ELECT	4.7MF	20%	50V
C206	1-124-925-11	ELECT	2.2MF	20%	50V
C207	1-124-927-11	ELECT	4.7MF	20%	50V
C213	1-126-233-11	ELECT	22MF	20%	50V
C214	1-106-363-00	MYLAR	0.0068MF	10%	400V
C217	1-106-363-00	MYLAR	0.0068MF	10%	400V
C218	1-106-375-12	MYLAR	0.022MF	10%	250V
C219	1-106-375-12	MYLAR	0.022MF	10%	250V
C220	1-108-620-11	MYLAR	0.0033MF	10%	100V
C221	1-108-620-11	MYLAR	0.0033MF	10%	100V
C222	1-106-385-00	MYLAR	0.056MF	10%	100V
C223	1-106-385-00	MYLAR	0.056MF	10%	100V
C224	1-106-367-00	MYLAR	0.01MF	10%	400V
C225	1-136-173-00	FILM	0.47MF	5%	50V
C226	1-136-173-00	FILM	0.47MF	5%	50V
C227	1-106-375-12	MYLAR	0.022MF	10%	250V
C228	1-106-379-12	MYLAR	0.033MF	10%	250V
C229	1-106-371-00	MYLAR	0.015MF	10%	400V
C230	1-106-371-00	MYLAR	0.015MF	10%	400V
C231	1-124-902-00	ELECT	0.47MF	20%	50V
C232	1-123-875-11	ELECT	10MF	20%	50V
C233	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C234	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C235	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C236	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C237	1-124-902-00	ELECT	0.47MF	20%	50V
C238	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C239	1-126-103-11	ELECT	470MF	20%	16V
C240	1-163-018-00	CERAMIC CHIP	0.0056MF	10%	50V
C241	1-163-018-00	CERAMIC CHIP	0.0056MF	10%	50V
C242	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C243	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C244	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C245	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C1401	1-123-875-11	ELECT	10MF	20%	50V
C1402	1-126-103-11	ELECT	470MF	20%	16V
C1403	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C1404	1-106-220-00	MYLAR	0.1MF	10%	100V
C1405	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C1406	1-106-220-00	MYLAR	0.1MF	10%	100V
C1407	1-124-910-11	ELECT	47MF	20%	50V
C1408	1-124-122-11	ELECT	100MF	20%	50V
C1409	1-126-233-11	ELECT	22MF	20%	50V
C1410	1-123-875-11	ELECT	10MF	20%	50V
C1411	1-123-875-11	ELECT	10MF	20%	50V
C1412	1-124-910-11	ELECT	47MF	20%	50V
C1413	1-124-910-11	ELECT	47MF	20%	50V
C1414	1-123-875-11	ELECT	10MF	20%	50V
C1415	1-106-220-00	MYLAR	0.1MF	10%	100V
C1416	1-106-220-00	MYLAR	0.1MF	10%	100V
C1417	1-124-120-11	ELECT	220MF	20%	16V

J1

REF.NO.	PART NO.	DESCRIPTION			REMARK
C1418	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C1419	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C1425	1-124-902-00	ELECT	0.47MF	20%	50V
C1426	1-124-902-00	ELECT	0.47MF	20%	50V
C1427	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C1428	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C1429	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C1430	1-163-003-11	CERAMIC CHIP	330PF	10%	50V
C1431	1-126-529-11	ELECT	0.47MF	20%	50V
C1432	1-124-902-00	ELECT	0.47MF	20%	50V
C1433	1-124-122-11	ELECT	100MF	20%	50V
C1436	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C1437	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C1438	1-106-367-00	MYLAR	0.01MF	10%	400V
C1439	1-106-367-00	MYLAR	0.01MF	10%	400V
C1440	1-123-875-11	ELECT	10MF	20%	50V
C1441	1-123-875-11	ELECT	10MF	20%	50V
C1442	1-106-220-00	MYLAR	0.1MF	10%	100V
C1443	1-106-220-00	MYLAR	0.1MF	10%	100V
C1444	1-124-910-11	ELECT	47MF	20%	50V
C1445	1-102-824-00	CERAMIC	470PF	5%	50V
C1446	1-102-824-00	CERAMIC	470PF	5%	50V
C1501	1-124-927-11	ELECT	4.7MF	20%	50V
C1502	1-124-791-11	ELECT	1MF	20%	50V
C1503	1-108-614-11	MYLAR	0.001MF	10%	100V
C1504	1-124-910-11	ELECT	47MF	20%	50V
C1505	1-106-383-00	MYLAR	0.047MF	10%	100V
C1507	1-108-620-11	MYLAR	0.0033MF	10%	100V
C1508	1-124-791-11	ELECT	1MF	20%	50V
C1509	1-124-791-11	ELECT	1MF	20%	50V
C1511	1-124-927-11	ELECT	4.7MF	20%	50V
C1513	1-163-105-00	CERAMIC CHIP	33PF	5%	50V

<CONNECTOR>

CN1401	1-565-838-11	PIN JACK BLOCK 2P

<DIODE>

D201	8-719-929-16	DIODE HZS9.1NB3
D202	8-719-929-16	DIODE HZS9.1NB3
D205	8-719-929-08	DIODE HZS7.5NB3
D206	8-719-929-08	DIODE HZS7.5NB3
D1401	8-719-929-08	DIODE HZS7.5NB3
D1404	8-719-929-08	DIODE HZS7.5NB3
D1405	8-719-929-08	DIODE HZS7.5NB3
D1407	8-719-929-20	DIODE HZS10NB3
D1408	8-719-929-16	DIODE HZS9.1NB3
D1409	8-719-929-16	DIODE HZS9.1NB3
D1410	8-719-929-16	DIODE HZS9.1NB3
D1415	8-719-929-08	DIODE HZS7.5NB3
D1418	8-719-929-08	DIODE HZS7.5NB3
D1419	8-719-929-08	DIODE HZS7.5NB3
D1420	8-719-929-08	DIODE HZS7.5NB3
D1421	8-719-929-08	DIODE HZS7.5NB3
D1422	8-719-929-08	DIODE HZS7.5NB3
D1423	8-719-929-08	DIODE HZS7.5NB3
D1424	8-719-929-08	DIODE HZS7.5NB3
D1425	8-719-929-08	DIODE HZS7.5NB3
D1426	8-719-929-08	DIODE HZS7.5NB3
D1501	8-719-300-33	DIODE RU-3AM
D1502	8-719-911-19	DIODE 1SS119
D1503	8-719-911-19	DIODE 1SS119
D1504	8-719-911-19	DIODE 1SS119
D1505	8-719-911-19	DIODE 1SS119
D1506	8-719-929-79	DIODE HZS36NB4
D1507	8-719-911-19	DIODE 1SS119
D1510	8-719-911-19	DIODE 1SS119

<IC>

IC201	8-759-013-17	IC TDA6200
IC1401	8-752-032-27	IC CXA1114P
IC1402	8-759-946-32	IC TEA2014A
IC1403	8-759-040-53	IC MC14053BCP
IC1501	8-759-942-16	IC TEA2031A

<TRANSISTOR>

Q201	8-729-271-22	TRANSISTOR 2SC2712-G
Q202	8-729-271-22	TRANSISTOR 2SC2712-G
Q1401	8-729-216-22	TRANSISTOR 2SA1162-G
Q1402	8-729-271-22	TRANSISTOR 2SC2712-G
Q1403	8-729-271-22	TRANSISTOR 2SC2712-G
Q1404	8-729-216-22	TRANSISTOR 2SA1162-G

<RESISTOR>

R201	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R202	1-216-206-00	METAL GLAZE	2.2K	5%	1/8W
R203	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R204	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R205	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R206	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R207	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R208	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R209	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R210	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R211	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R212	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R213	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R214	1-216-033-00	METAL GLAZE	220	5%	1/10W
R215	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R216	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R217	1-216-077-00	METAL GLAZE	15K	5%	1/10W
R218	1-216-033-00	METAL GLAZE	220	5%	1/10W
R219	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R220	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R221	1-216-041-00	METAL GLAZE	470	5%	1/10W
R222	1-216-041-00	METAL GLAZE	470	5%	1/10W
R223	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R224	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R225	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R226	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R227	1-216-033-00	METAL GLAZE	220	5%	1/10W
R228	1-216-033-00	METAL GLAZE	220	5%	1/10W
R229	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R230	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R231	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R232	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R233	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R234	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R240	1-216-033-00	METAL GLAZE	220	5%	1/10W
R241	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R242	1-216-091-00	METAL GLAZE	56K	5%	1/10W
R243	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R244	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W
R245	1-216-075-00	METAL GLAZE	12K	5%	1/10W

REF.NO.	PART NO.	DESCRIPTION				REMARK
R246	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R247	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R248	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R249	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R250	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R1401	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R1402	1-216-170-00	METAL GLAZE	68	5%	1/8W	
R1403	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1404	1-216-178-00	METAL GLAZE	150	5%	1/8W	
R1405	1-249-429-11	CARBON	10K	5%	1/4W	
R1407	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1408	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1409	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R1410	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1411	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R1412	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1413	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1414	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1415	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R1416	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R1417	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R1418	1-247-738-11	CARBON	82	5%	1/2W	F
R1422	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1423	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1424	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1425	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R1426	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1427	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R1428	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1429	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1430	1-216-170-00	METAL GLAZE	68	5%	1/8W	
R1431	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R1432	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R1433	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R1434	1-249-393-11	CARBON	10	5%	1/4W	F
R1437	1-249-429-11	CARBON	10K	5%	1/4W	
R1440	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R1441	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R1442	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1443	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1444	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R1445	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R1446	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R1447	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R1448	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1452	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R1453	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R1454	1-216-180-00	METAL GLAZE	180	5%	1/8W	
R1455	1-216-180-00	METAL GLAZE	180	5%	1/8W	
R1457	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1459	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1460	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R1461	1-216-190-00	METAL GLAZE	470	5%	1/8W	
R1462	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R1463	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R1464	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R1465	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R1466	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R1467	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1468	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1469	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1470	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R1471	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R1472	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R1473	1-216-023-00	METAL GLAZE	82	5%	1/10W	
R1474	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1476	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1477	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R1478	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1480	1-216-190-00	METAL GLAZE	470	5%	1/8W	
R1482	1-216-178-00	METAL GLAZE	150	5%	1/8W	
R1483	1-216-178-00	METAL GLAZE	150	5%	1/8W	
R1484	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R1485	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R1486	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R1487	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R1488	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R1489	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R1501	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R1502	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R1503	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1504	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R1505	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R1506	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R1509	1-216-105-00	METAL GLAZE	220K	5%	1/10W	
R1510	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R1511	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R1512	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R1513	1-216-091-00	METAL GLAZE	56K	5%	1/10W	
R1514	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R1516	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R1517	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R1519	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R1520	1-216-111-00	METAL GLAZE	390K	5%	1/10W	
R1521	1-216-214-00	METAL GLAZE	4.7K	5%	1/8W	
R1550	1-216-349-00	METAL OXIDE	1	5%	1W	F
R1556	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	

<VARIABLE RESISTOR>

RV1501	1-238-023-11	RES, ADJ, CARBON	470K
RV1502	1-238-016-11	RES, ADJ, CARBON	10K
RV1503	1-238-017-11	RES, ADJ, CARBON	22K
RV1504	1-238-012-11	RES, ADJ, CARBON	1K
RV1505	1-238-023-11	RES, ADJ, CARBON	470K
RV1506	1-238-017-11	RES, ADJ, CARBON	22K
RV1507	1-238-009-11	RES, ADJ, CARBON	220
RV1508	1-238-016-11	RES, ADJ, CARBON	10K
RV1509	1-238-023-11	RES, ADJ, CARBON	470K

****

*A-1654-003-A IFG BOARD, COMPLETE

****

*1-565-488-11 CONNECTOR, BOARD TO BOARD 12P

<CAPACITOR>

C1	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C2	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C3	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C4	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C5	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C6	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C7	1-124-791-11	ELECT	1MF	20%	50V
C8	1-123-875-11	ELECT	10MF	20%	50V
C9	1-130-471-00	MYLAR	0.001MF	5%	50V
C10	1-163-121-00	CERAMIC CHIP	150PF	5%	50V

IFG

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF.NO.	PART NO.	DESCRIPTION			REMARK
C11	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C12	1-136-298-00	FILM	0.0033MF	2%	100V
C13	1-124-477-11	ELECT	47MF	20%	16V
C14	1-124-477-11	ELECT	47MF	20%	16V
C15	1-124-477-11	ELECT	47MF	20%	16V
C16	1-124-477-11	ELECT	47MF	20%	16V
C17	1-123-875-11	ELECT	10MF	20%	50V
C18	1-106-367-00	MYLAR	0.01MF	10%	400V
C19	1-106-367-00	MYLAR	0.01MF	10%	400V
C20	1-126-233-11	ELECT	22MF	20%	50V
C21	1-126-233-11	ELECT	22MF	20%	50V
C22	1-106-220-00	MYLAR	0.1MF	10%	100V
C23	1-106-228-00	MYLAR	0.22MF	10%	100V
C24	1-124-963-11	ELECT	33MF	20%	16V
C25	1-106-375-12	MYLAR	0.022MF	10%	250V
C26	1-106-383-00	MYLAR	0.047MF	10%	100V
C27	1-124-791-11	ELECT	1MF	20%	50V
C28	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C29	1-124-791-11	ELECT	1MF	20%	50V
C30	1-124-791-11	ELECT	1MF	20%	50V
C31	1-106-367-00	MYLAR	0.01MF	10%	400V
C32	1-130-479-00	MYLAR	0.0047MF	5%	50V
C33	1-163-081-00	CERAMIC CHIP	0.22MF		25V
C34	1-106-228-00	MYLAR	0.22MF	10%	100V
C35	1-123-875-11	ELECT	10MF	20%	50V
C36	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C37	1-124-477-11	ELECT	47MF	20%	16V
C38	1-124-477-11	ELECT	47MF	20%	16V

<FILTER>

CDA1	1-404-751-11	DISCRIMINATOR, CERAMIC
CDA2	1-404-750-11	DISCRIMINATOR, CERAMIC
SFT1	1-527-840-00	FILTER, CERAMIC
SFT2	1-527-839-00	FILTER, CERAMIC

<DIODE>

D3	8-719-400-18	DIODE MA152WK

<IC>

IC1	8-759-003-90	IC TBA129
IC2	8-759-003-90	IC TBA129
IC3	8-759-030-48	IC TDA6600-2
IC4	8-759-946-99	IC TDA2595-V7

<COIL>

L1	1-408-410-00	INDUCTOR	12UH
L2	1-408-410-00	INDUCTOR	12UH
L3	1-410-064-11	INDUCTOR	2.7MMH
L4	1-408-421-00	INDUCTOR	100UH
L5	1-408-421-00	INDUCTOR	100UH

<TRANSISTOR>

Q2	8-729-901-00	TRANSISTOR DTC124EK
Q3	8-729-216-22	TRANSISTOR 2SA1162-G
Q4	8-729-901-00	TRANSISTOR DTC124EK

<RESISTOR>

JR8	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR10	1-216-296-00	METAL GLAZE	0	5%	1/8W

REF.NO.	PART NO.	DESCRIPTION				REMARK
R1	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R2	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R3	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R5	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R6	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R7	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R9	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R10	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R11	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R12	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R15	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R16	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R17	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R18	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R19	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R20	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R22	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R24	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R25	1-216-077-00	METAL GLAZE	15K	5%	1/10W	

<VARIABLE RESISTOR>

RV1	1-238-016-11	RES, ADJ, CARBON 10K
RV2	1-238-019-11	RES, ADJ, CARBON 47K

****

MISCELLANEOUS
****

⚠	1-426-398-11	COIL, DEMAGNETIZATION
⚠	1-451-313-21	DEFLECTION YOKE (Y29FXA)
	1-452-032-00	MAGNET, DISK; 10MM ϕ
	1-452-094-00	MAGNET, ROTATABLE DISK; 15MM ϕ
⚠	1-452-509-42	NECK ASSY, PICTURE TUBE (NA-308)
		SPEAKER
⚠	1-575-487-11	CORD,POWER (WITH NOISE FILTER)
V901 ⚠	8-733-823-05	PICTURE TUBE (A68JYK60X)

****

ACCESSORIES AND PACKING MATERIALS
****

PART NO.	DESCRIPTION	REMARK
3-752-237-11	MANUAL, INSTRUCTION	
*4-384-027-01	BAG, PROTECTION	
*4-398-903-01	CUSHION (UPPER) (ASSY)	
*4-398-904-01	CUSHION (LOWER) (ASSY)	
*4-398-905-01	INDIVIDUAL CARTON	

REMOTE COMMANDER

1-465-363-11	COMMANDER, REMOTE (RM-689)	
4-395-610-01	COVER, BATTERY (FOR RM-689)	

9-964-569-01

Sony Corporation
TV Group

English
90GH0243-1
Printed in Japan
©1990.7